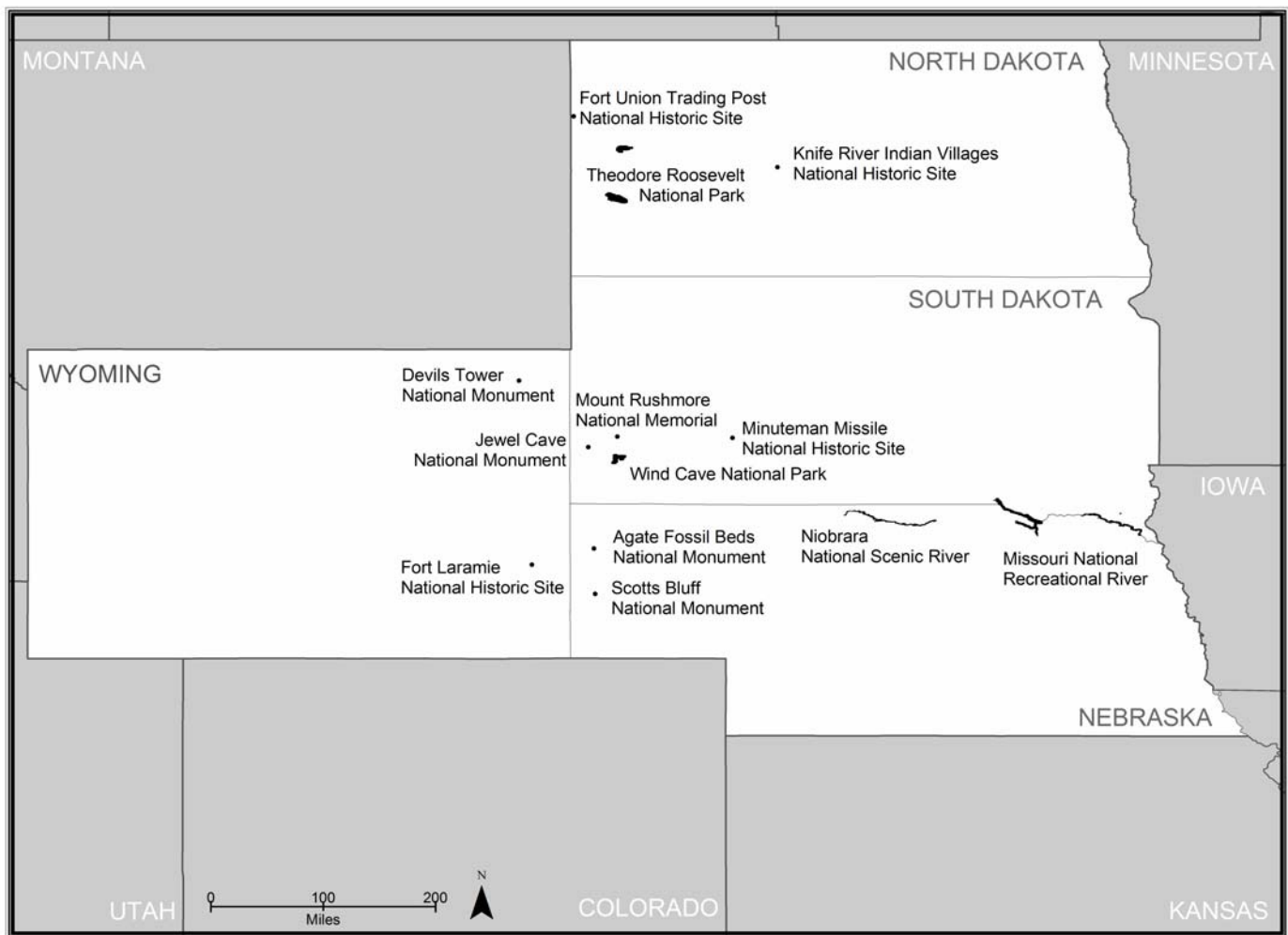




# Northern Great Plains Exotic Plant Management Plan

## Finding of No Significant Impact

September 2005



*Canada thistle*



*Houndstongue*



*Leafy spurge*



*Purple loosestrife*

## **FINDING OF NO SIGNIFICANT IMPACT NORTHERN GREAT PLAINS EXOTIC PLANT MANAGEMENT PLAN AND ENVIRONMENTAL ASSESSMENT**

The National Park Service (NPS) will implement an Exotic Plant Management Plan (EPMP) to control exotic (non- native) plants at 13 parks located in the Northern Great Plains (NGP) area. The intent of this project is to manage exotic plants to reduce their negative effects on native plant communities and other natural and cultural resources within these parks. Parks included in this plan are Agate Fossil Beds National Monument, Devils Tower National Monument, Fort Laramie National Historic Site, Fort Union Trading Post National Historic Site, Jewel Cave National Monument, Knife River Indian Villages National Historic Site, Minuteman Missile National Historic Site, Missouri National Recreational River, Mount Rushmore National Memorial, Niobrara National Scenic River, Scotts Bluff National Monument, Theodore Roosevelt National Park, and Wind Cave National Park.

Exotic plants are species that occur outside of their native ranges as a result of direct or indirect human actions. Exotic plants replace native plant communities, degrade wildlife habitats, and reduce the biological diversity of ecosystems. For example, more than 20,000 acres (about 30 percent) of native habitats for plants within Theodore Roosevelt National Park have been altered by the spread of exotic plant species. Exotic plants are also affecting habitats of federally listed threatened and endangered plants. Both the Missouri National Recreational River and the Niobrara National Scenic River have sections of federally designated critical habitat for the piping plover (*Charadrius melodus*). Purple loosestrife (*Lythrum salicaria*), an aggressive exotic plant, is threatening this critical habitat. More than 2,000 acres of monotypic stands of purple loosestrife have been mapped at these parks.

### **PREFERRED ALTERNATIVE**

Under Alternative 2, or the preferred alternative, the NPS will use an integrated pest management (IPM) approach to control exotic plants at 13 parks. The NPS has a mandate to preserve natural and cultural resources now and for future generations. The preferred alternative will assist parks in meeting this mandate by implementing effective IPM practices.

IPM is a decision- making process that supports the NPS mission by coordinating knowledge of pest biology, the environment, and available technology to prevent unacceptable levels of pest damage, using environmentally sound, cost- effective management strategies that pose the least possible risk to people, park resources, and the environment. This process helps resource specialists determine whether treatment of an exotic plant is necessary and appropriate, where treatment should be administered, when treatment should be applied, and what strategies should be used for immediate and long- term results. IPM is done on a case- by- case basis, so that treatment strategies are tailored to local conditions. Each exotic plant's natural history is also evaluated before developing treatment strategies.

IPM employs multiple integrated management practices rather than a single solution, wherever technically and economically feasible. An integrated approach is often more effective than a single type of treatment. This plan considers all treatment methods that are currently being implemented by the 13 park units, or that may be used in the foreseeable future. IPM treatments that will be used under the preferred alternative include:

- Cultural Treatments — practices that promote the growth of desirable plants and reduce the opportunities for exotic plants to grow. Examples include irrigation and seeding of native plant species.
- Manual/Mechanical Treatments — physical damage to or removal of part or all of the plant. Examples include hand pulling, cutting, grubbing, haying, and mowing.
- Biological Treatments — biological control, or biocontrol - the use of “natural enemies”, such as insects and microorganisms to reduce the abundance of an exotic plant. Natural enemies are imported from areas where the target exotic plant occurs as a native plant and are deliberately released into areas where the plant is exotic. Examples include plant- feeding insects such as flea beetles (*Aphthona lacertosa*) for leafy spurge (*Euphorbia esula*) and leaf beetles (*Galerucella* spp.) for purple loosestrife. Approved biological agents will be host-specific and have a negligible risk for becoming a pest.
- Chemical Treatments — applying pesticides as prescribed by their labels, using a variety of application methods. Examples of application methods include portable sprayers, all- terrain vehicles (ATVs) equipped with sprayers, and aerial application (helicopter and fixed- wing).
- Prescribed Fire Treatments — applying fire to a predetermined area to reduce the growth of exotic plants and to increase the growth of desirable plants.

Individual treatments, or combinations of those treatments, will be implemented as appropriate to control exotic plants in the 13 parks. Parks will cooperate with state, county, private, tribal, and federal officials. Such coordination will be especially necessary in parks with management partnerships such as Missouri National Recreational River and the Niobrara National Scenic River.

Under the preferred alternative, resource specialists at each park will use a Decision-making Tool, developed specifically for this plan, for exotic plant management planning. In using this tool, resource specialists at each park will follow a standard decision-making process to identify exotic plants, determine exotic plant management priorities, identify and evaluate the efficacy and environmental effects of the proposed treatment, consider alternative treatments having less impacts, justify why a treatment was selected, and confirm compliance with applicable policies and regulations. Resource specialists will also be able to use the results of this analysis to explain to the public how each of these factors was considered in selecting treatment methods.

The general management objective of this plan is to prevent unacceptable levels of exotic plant damage, using environmentally sound, cost- effective management strategies that pose the least possible risk to people, park resources, and the environment. Under the preferred alternative, resource specialists will also establish specific exotic plant

management objectives for their park. These management objectives will be developed based on NPS policy, resource management objectives for the park, the size of the park, and the extent and type of exotic plant infestations within the park. If the extent and distribution of exotic plants are not known, additional data collection such as mapping may be required before management objectives can be established.

Once management objectives are established for a park, plant species lists will be reviewed to identify exotic plants. Those plants that occupy or could occupy parklands directly or indirectly as the result of deliberate or accidental human activities are considered “exotic.” Any plants that do not meet this definition are not exotic plants and will not be managed under the EPMP.

Exotic plants that are listed as county, state, or federal noxious weeds are considered a general management priority. Relative management priorities for each exotic plant (including noxious weeds) will also be determined using a system developed for this plan that allow resource specialists to qualitatively determine exotic plant management priorities. The results of the rankings will be used to determine relative management priorities. In accordance with NPS management policies, highest priority will be to manage disruptive exotic plants that have, or potentially have, a substantial impact on park resources, and can reasonably be expected to be controlled. Lower priority will be given to innocuous exotic plants that are not likely to significantly harm park resources.

Using the Decision- making Tool, resource specialists will identify a proposed treatment option or options that are feasible given potential costs, available resources, potential impacts and effectiveness, and applicable regulations and policies. The resource specialist will then consider whether there are any other treatment options, treatment agents, or application methods available that will result in lower impacts when compared to the proposed treatment option given potential costs, available resources, impacts, and effectiveness. If there are no other feasible options available, the resource specialist selects the proposed treatment. However, if the resource specialist identifies an alternative treatment that has lower impacts and that is feasible, the alternative treatment option will be selected.

Once a treatment method is selected pursuant to this plan, its compliance with NPS policies and the National Environmental Policy Act (NEPA) will be confirmed. Two separate decision trees will be used to confirm compliance. If chemical or biological control treatments covered in this plan are selected, their compliance with applicable regulations and policies will be confirmed. Compliance with NEPA will also be confirmed for all treatments. If compliant, the resource specialist will also determine whether there are any sensitive resources located within the treatment area that could be affected by the proposed treatment. Examples of sensitive resources include threatened, endangered, or traditional use plants; historic structures with limestone grout; raptor nests; and cave resources. If sensitive resources are identified, the locations of these resources and appropriate buffer areas will be delineated so they can be avoided. Once sensitive resources have been delineated and buffer areas established, the selected treatment along with best management practices (BMPs) to mitigate potential impacts can be implemented.

Treated areas will be monitored to determine whether management objectives established during the initial planning stages were met. If management objectives are met, the resource specialist will document the results of monitoring. The resource specialist will also continue to consider other treatment options as they become available to identify other alternatives that might have even lower impacts. If the proposed treatment complies with applicable policies and regulations, the resource specialist will document this compliance with a memo to file.

If management objectives are not met, the selected treatment may be modified, or alternative treatments may be considered, through adaptive management. The NPS must use adaptive management to fully comply with 40 CFR 1505.2(c), which requires a monitoring and enforcement program to be adopted, where applicable, for any mitigation activity. Adaptive management is a system of management practices based on clearly identified outcomes; monitoring to determine if management actions are meeting outcomes; and if not, facilitating management changes that will best ensure that outcomes are met or by reevaluating outcomes. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain and is the preferred method of management in these cases.

## **MITIGATION MEASURES INCLUDED UNDER ALTERNATIVE 2**

The park's resource manager responsible for supervising exotic plant management activities is responsible for ensuring that mitigation measures and BMPs occur. To minimize the potential impacts from personnel and equipment, the following general BMPs will be implemented under the preferred alternative:

- Equipment will use existing roads and trails to the maximum extent practical.
- Physical disturbance to ground nesting birds and burrowing animals will be avoided, to the extent possible. Any activities that would cause direct physical disturbance to nests or burrows encountered will be avoided.
- Equipment used for exotic plant management will be washed prior to entering a park to reduce the potential for accidentally introducing exotic plants from another area.
- To limit the potential for equipment to spread exotic plant seeds, treatments should be completed before seed becomes viable.
- ATVs will be transported by trailer from one general area of the park to another. Trailers will be used to avoid unnecessary cross-country travel, tracks, and to promote safe operation.
- ATVs and other equipment will be routed along breaks in topography or behind existing tree groupings where possible.
- Personnel and equipment will avoid areas having sensitive soils or areas that are prone to erosion.
- Use of equipment in high visibility areas will be avoided to the extent feasible.
- If ATVs will be used in highly visible areas, ATVs will follow slope contours to minimize the potential for visual disturbance.
- Any crossings to access treatment areas should be done at a right angle to the access road.

- Surface disturbing activities, such as tilling or use of heavy equipment, will be avoided within the boundary of known or potential cultural resource or historic resource sites.
- ATVs will be routed to avoid palustrine (wet or marshy) wetlands. ATVs will avoid wetland areas with standing water or saturated soils, to the extent practical.
- ATVs will be operated to minimize disturbance to vegetation and soils. ATVs will not be operated under conditions where soil is susceptible to compaction, erosion, or creation of wheel ruts.
- The number of vehicle and ATV passes off- road will be minimized to the extent possible.
- Information will be developed for the public and park staff on exotic plants. This information may include signs, interpretive displays, brochures, and programs.

Under the preferred alternative, specific BMPs were developed for cultural, manual/mechanical, biological control, chemical, and prescribed fire treatment methods.

### **Mitigation Specific to Cultural Treatments**

- Any feed, forage, mulch, fill, gravel, or other like materials brought into a park should be certified free of exotic plant seed (“certified weed- free”).
- Sources of “clean fill” (weed- free) will be used, where available. If not feasible, fill not designated as “clean fill” may be used but should be closely monitored for exotic plant growth. Construction equipment will otherwise avoid exotic plant infestations, to the extent feasible.
- Horses and pack animals will be brushed thoroughly and have their hooves cleaned before entering a park.
- Horses and pack animals should be fed only food that is “certified weed free” starting 96 hours before entering a park.
- Any seed or plant materials used for restoration efforts within a park should be “certified weed free.”
- Inspections and cleaning of contractors’ and fire fighters’ equipment, vehicles, and materials may be required to prevent importation of nonnative plant seed or materials into a park.
- Commercial users that disturb established vegetation may be required to provide bonds that are retained until sites are returned to a specified condition.
- BMPs will be developed to limit the amount and impact of ground- disturbing activities.
- Park staff and volunteers will be trained on how to identify priority exotic plants.
- Any materials used in revegetation (including mulch and organic fertilizers) will be free of non- native plant seeds or materials. In addition, locally grown, native plant materials will be used where possible. All plant materials used will be “certified weed- free.”
- If drought conditions are forecasted, resource managers should delay the purchase and planting of shrubs to avoid the need for irrigation. Resource managers should also confirm that there is water available for irrigation should the need arise.

### **Mitigation Specific to Manual/Mechanical Treatments**

- Heavy equipment will only be used in areas of dense exotic plant infestations and where there are no natural or cultural resources that could be impacted by this equipment.
- In the event that cultural resources are encountered during manual or mechanical treatments, all work will stop immediately and will not continue until the site is evaluated and cleared by a qualified cultural resource specialist.
- Operation of heavy equipment for activities such as tilling will not be conducted when soil is either too wet or too dry, in order to minimize the potential for affecting soil structure.
- Treatments that involve surface disturbance activities in riparian or wetland areas, such as tilling or dredging, will be avoided. Any activities that could disturb wetlands or waters of the U.S. will require separate consultation with the U.S. Army Corps of Engineers to determine if a permit is needed.

### **Mitigation Specific to Biological Control Treatments**

- Only those biological control agents approved by U.S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS) will be used.
- When considering the use of a new biological control agent, the resource manager will confirm that its use is necessary and that all other treatment options are either not acceptable or not feasible.
- Before a biological control agent is released, the resource specialist will receive approval from the National IPM Coordinator to release the agent.
- If biological control agents will be obtained from another state, a permit, which has been reviewed by the State Entomologist, must also be obtained from APHIS.
- The transport, handling, and release of biological control agents will be in accordance with all permit conditions. Parks will use a standardized form to report annual releases of biological control agents to the Regional IPM Coordinator.
- Biological control agents will be released in each climatic zone that is occupied by the host plant so that the agent has a chance to develop in all areas where the host occurs.
- The number of biological control agents released will account for the size and density of the treatment area and the number of agents required to maintain a viable biological control agent population.
- Releases will be synchronized with the time period when the host is present. Biological control agents will be released at times of the day when they will not disperse from the treatment area.
- Surveys for biological control agents will be completed several times during the season to monitor biological control agents.

### **Mitigation Specific to Chemical Treatments**

- Aerial application of pesticides will only be conducted for sites that meet one of the following criteria:

- The infestation covers a large area and will be most effectively treated from the air. There is no acre limit for using aerial application; however, aerial application sites are typically over 20 acres and have fairly dense exotic plant coverage.
- The infestation covers a small area but can be successfully treated using a microfoil boom or similar apparatus that allows for a limited band of spray. Microfoil booms are designed specifically to minimize pesticide drift. A microfoil boom can be used to spray widths as small as 12 feet, effectively treating small infestations.
- The infestation is very remote and treatment using other application methods will require an inordinate amount of time for crews to arrive and apply ground treatment.
- The infestation is located on rough, steep terrain that prevents ground application and is too dangerous for employees on foot.

Pesticides will be selected and BMPs will be implemented to maximize the effectiveness of the treatment on the target exotic plant and to minimize the potential effects on non-target plants as follows:

- All federal, state, and local regulations regarding pesticide use will be followed at all times.
- All product labels will be read and followed by pesticide applicators. It is a violation of federal law to use a pesticide in a manner that is inconsistent with its label.
- Pesticide applicators will obtain any certifications or licenses required by the state and/or county.
- Reduced application rates of pesticides will be used wherever possible.
- Pesticides will be applied as near to the target plant as possible.
- Pesticide application will account for meteorological factors such as wind speed, wind direction, inversions, humidity, and precipitation in relation to the presence of sensitive resources near the treatment area and direction provided on labels.
- Pesticides will only be applied when meteorological conditions at the treatment site allow for complete and even coverage and will prevent drifting of spray onto non- target sensitive resources or areas used by humans.
- Pesticides will be applied only during periods of suitable meteorological conditions. Pesticides should also not be applied during periods of dead calm (this could indicate an inversion) or when wind velocity and direction pose a risk of spray drift.
- Pesticides will be applied using coarse sprays to minimize the potential for drift. Combinations of pressure and nozzle type that will result in fine particles (mist) will be avoided. Thickeners will be added if the product label permits.
- Pesticides will be applied at the appropriate time based on the pesticide's mode of action.
- Pesticides will be applied according to application rates specified on the product label.
- In areas where there is the potential to affect surface water or ground water resources, pesticide pH and soil pH will be considered to select the pesticide with the lowest leaching potential.



- Highly water- soluble pesticides will not be used in areas where there is potential to affect surface water or ground water resources.
- Pesticides with high volatility will not be used to treat areas located adjacent to sensitive areas because of the potential for unwanted movement of pesticides to these areas.
- Pesticides with high soil retention will be used in areas where there is potential to affect surface water or ground water resources.
- Pesticides with longer persistence will be applied at lower concentrations and with less frequency to limit the potential for accumulation of pesticides in soils.
- As needed to protect the efficacy of the pesticide, water will be buffered, depending on hardness, pH, and other factors.
- Safety protocols for storing, mixing, transporting, handling spills, and disposing of unused pesticides and containers are included in the plan will be followed at all times.
- NPS policy requires that only pesticides that are expected to be used in a 1- year period can be purchased at one time. Therefore, pesticides will not be stored for periods greater than one year.
- Equipment would be maintained and calibrated: prior to each application of pesticides.
  - On a regular basis, and at a minimum of the start of each season
  - Prior to an applicator operating new equipment or equipment on which they have not been calibrated
  - After equipment is repaired or replaced in a manner that could affect the application rate.
- During all applications, droplet size will be controlled to decrease the risk of pesticide drift to non- target species outside the immediate treatment area.
- All concessionaires will comply with this plan and NPS policies when applying pesticides.
- Any motorized water crossings to access treatment areas will be done at right angles to drainages to minimize potential disturbance.
- Areas that may contain cultural or historic resources and that have not been previously studied will be surveyed. If cultural or historic resources are identified or are known to occur, all surface disturbing activities will be avoided in these areas.
- Use of pesticides within the boundaries of the cultural resource or historic resource sites will be restricted. Because of unknown effects, pesticides will not be directly applied to historic structures with limestone grout, hearth features, or cultural resources comprised of organic material, bone, pollen, seeds, and materials made from plant fiber. However, pesticides may be used in lands surrounding cultural or historic sites in accordance with BMPs.

To minimize the potential impact of pesticides on surface water and ground water resources, the following BMPs will be implemented:

- Only pesticides that are registered for use in or near water will be used in those areas.

- Only those pesticides that have a low potential toxicity, such as glyphosate (Roundup Pro and Rodeo) will be used within areas near surface waters or in areas with a high leaching potential.
- Applications of pesticides will be avoided during periods and in areas where seasonal precipitation or excess irrigation water is likely to wash residual pesticides into waterways.
- Applications of pesticides within 50 feet of surface water bodies (including streams, rivers, lakes, and waterways) will be done by hand or with vehicle mounted ground equipment to minimize the potential impacts to surface waters.
- If aerial applications are used, flights will be designed and scheduled for wind conditions that minimize potential impacts to surface waters.
- Each park currently monitors potable drinking water quality. This monitoring will continue to confirm that potable water meets drinking water standards as outlined by the Safe Drinking Water Act.
- Parks will implement surface water and ground water monitoring programs as appropriate to protect natural resources.
- The Relative Aquifer Vulnerability Evaluation (RAVE) system will be used by parks, as necessary and appropriate, to evaluate potential risks to ground water from chemical treatments. The RAVE system can be used to assess risk of ground water contamination for chemicals applied to either agriculture systems or ecosystems.
- When available from the Regional IPM Coordinator, vertical buffer zones to ground water will be used.

To minimize the potential impact of pesticides on cave resources, the following BMPs will be implemented or continued at Jewel Cave National Monument and Wind Cave National Park:

- Implementation plans identifying pesticide treatment zones will be developed for both Jewel Cave and Wind Cave. These plans will undergo further NEPA compliance with public involvement. Management practices to protect cave and karst resources could vary from park to park because of differing geology and hydrology.
- “No- Pesticide Treatment Zones” will designate areas in which no pesticides will be applied. These zones will include areas above known cave drip sites, areas within the watersheds which have potential to drain into cave and karst resources, and areas where permeable rock layers are uncapped.
- “Minor Risk Treatment Zones” will designate areas where pesticides can be considered as part of the IPM practices for the area. These zones will be areas that pose very minor risk to cave and karst resources. Chemicals with high specificity, low leaching potential, and low persistence will be preferred for use in these areas, and pesticides will be hand sprayed on individual plants. Broadcast spraying of pesticides will not be permitted in these zones.
- “Negligible- Risk Treatment Zones” will be designated, where appropriate. Within these zones, all methods of chemical application will be considered as part of the overall IPM management.

- Jewel Cave and Wind Cave will develop or continue programs to monitor water quality in the cave(s), and will re-evaluate the pesticide treatment zones if chemicals used by the park are detected in cave drip water.

### **Mitigation Specific to Prescribed Fire Treatments**

- Parks with fire management plans that included the use of prescribed fire will be able to use prescribed fire treatments to manage exotic plants under the preferred alternative. BMPs, as indicated by the respective parks' fire management plan and specific prescribed fire plan, will be followed during prescribed fire treatments.
- BMPs will include topics relevant to the park and to a specific prescribed fire, such as protection of public health and safety and the appropriate natural and cultural resources (air, water, vegetation, wildlife, soils, historic structures, archeological sites, other sensitive resources).
- Standard protocol for site assessment before treatment and monitoring after treatment will be used to set goals and objectives, and to determine whether or not they were achieved. Effects of the treatment on specific plant species and vegetation communities will also be monitored.
- Prescribed fire treatment may be excluded from sensitive resources or from areas with exotic plant populations that respond positively to fire. Monitoring will be conducted at regular intervals, such as immediately after the fire, 1 year post-fire, 2 years post-fire, and 5 years post-fire.

### **ALTERNATIVES CONSIDERED**

The alternatives presented in this document are the result of agency and public scoping input, and their impacts are analyzed in accordance with NEPA. All alternatives must be consistent with the purpose and significance of all 13 parks included in this plan, and they must meet the purpose of and need for action, as well as the objectives of the plan. Five alternatives, including the no action alternative, were originally considered, three of which were dismissed for various reasons.

The environmental assessment includes two alternatives: the preferred alternative (Alternative 2) described above, and the no action alternative (Alternative 1). Under Alternative 1, no additional action will be taken to control exotic plants within the 13 parks and existing exotic plant management programs at each of the 13 parks will be continued. The no action alternative is the baseline for analyzing impacts of the alternatives.

Alternative 2, the preferred alternative, proposes to use an IPM approach to control exotic plants at 13 parks.

Three additional alternatives were considered, but were eliminated from detailed study. These alternatives included:

- Alternative 3 - Stop all exotic plant management and control activities within each park.

- Alternative 4 - Develop an IPM Plan that considers all treatments except chemical treatments.
- Alternative 5 - Develop an IPM Plan that considers all treatments except biological control treatments.

These alternatives and issues were eliminated from detailed study because they did not meet the criteria below.

1. The alternative must be consistent with NPS management policies and guidelines.
2. The alternative must respond to the purpose of and need for action.
3. The alternative must be feasible from a technical and economic standpoint, while remaining environmentally responsible.
4. The alternative must be compatible with the policies and regulations of other agencies and jurisdictions.
5. The alternative must be capable of being implemented in a timely manner because the purpose of and need for action is immediate.

## **ENVIRONMENTALLY PREFERRED ALTERNATIVE**

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that, “The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserve important historic, cultural, and natural aspects to our national heritage and maintain, wherever possible, an environment that supports diversity and a variety of individual choice;
5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of renewable resources.”

Based on the analysis prepared in this environmental assessment, Alternative 2 is considered the environmentally preferred alternative.

The no action alternative, which will continue the use of existing methods to treat exotic plants at 13 parks, will not satisfy the first four requirements detailed above. Alternative 1 has more potential adverse impacts on resources due to the lack of resource- specific BMPs. If current exotic plant management programs continue, the biological and

physical environment will continue to be degraded by impacts of exotic plants on native plant species, wildlife, and threatened or endangered species, thus diminishing the quality of the environment for future generations. Alternative 1 will also have fewer beneficial effects because the overall effectiveness of current exotic plant management programs is limited. Parks that do not have a standardized approach to assist in decision-making have difficulty selecting the most appropriate treatment option. Other parks currently do not have the necessary compliance in place to implement some treatment options. Regarding long-term impacts, Alternative 1 realizes a lower number of positive impacts because it provides less effective treatment of exotic plants and requires an indefinite treatment period.

In contrast to the no action alternative, Alternative 2 will satisfy the majority of the six requirements listed above. Alternative 2 realizes greater beneficial effects over the long-term because it provides for more rapid control of exotic plants. Alternative 2 is the environmentally preferred alternative because it provides the most long-term benefits to the environment. Exotic plants within 13 parks will be reduced, helping to ensure a safe, healthful, and productive environment for park visitors and employees. Control of exotic plants will also help promote aesthetically and culturally pleasing aspects of the surroundings, while reducing the amount of degradation, risk of health or safety, or other undesirable and unintended consequences. The 13 parks included in this plan will be better preserved through the use of IPM. IPM will also help maintain the integrity of important historic and cultural aspects of our national heritage. Treatment of exotic plants using IPM and the resultant decrease in exotic plants could improve the public's perception of the 13 parks, perhaps resulting in increased visitation. This will help achieve a balance between population and resource use, permitting a "wide sharing of life's amenities." As under the no action alternative, Alternative 2 will not impact the quality of renewable resources or inhibit the attainable recycling of depletable resources.

#### **WHY THE PREFERRED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT**

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

*Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal Agency believes the balance of the effect will be beneficial.* The preferred alternative will have no significant beneficial or adverse effects.

#### **Geology**

IPM will not inhibit the desired condition to have natural and geologic processes maintained in as natural condition as possible. Physical disturbance associated with manual and mechanical treatments will not have any measurable or perceptible effect on geologic features. However, surface disturbance associated with IPM activities may cause minor impacts to unknown paleontological resources. Chemical treatments will not have any measurable or perceptible effect on geological resources. Biological control treatments also will not have any measurable or perceptible effect on geological resources. Prescribed fire may cause minor changes to some geological resources.

Effects may include some deposition of carbonaceous residue and carbonaceous blackening of the upper surfaces. However, these changes will be small, site- specific, and will be consistent with changes observed from natural fires. The impacts of IPM on geologic resources will be directly adverse, site- specific, short- and long- term, and negligible to minor.

### **Caves and Karst**

Exotic plant management will not inhibit the achievement of the desired condition to have the natural systems associated with caves perpetuated. Cultural treatments will not have any measurable or perceptible effects on cave and karst resources at Jewel Cave National Monument and Wind Cave National Park. Manual and mechanical treatments will also not have measurable or perceptible effects on cave and karst resources. The effect of tilling or other ground- disturbing activities will be negligible. With the implementation of BMPs, the effect of chemical treatment on cave resources, as currently understood, will be reduced. Although impacts are difficult to determine, water sampling will reveal any pesticide reaching the cave at selected drip sites and will allow management to re- evaluate pesticide use practices. Cave biota, some potentially unique and cave adapted, may be threatened if herbicides occur in cave waters. The ecology and vulnerability of such organisms are not well understood, and impacts could occur despite our best efforts to prevent them. There will be no impact of biological treatments on cave and karst resources. Impacts to the natural drainage patterns and water quality in cave resources will not likely occur from prescribed fires because ground cover will not be altered or eliminated above the resource. Based on current knowledge, the impacts of exotic plant management on cave and karst resources will likely be directly and indirectly adverse, site- specific, short- and long- term, and negligible to minor.

### **Air Quality and Visual Resources**

IPM will not inhibit the maintenance of the desired condition to have National Ambient Air Quality Standards met, current air quality maintained, and integral vistas protected. There may be some impacts to air quality, including a temporary increase in fugitive dust from vehicles and soil disturbing activities, and an increase in emissions from vehicle exhaust and equipment.

Wind may cause limited dispersion of chemicals, although resulting changes in air quality will not likely be detectable. Some minor, adverse, short- term visual impacts may occur from the use of pesticides. On a small scale, non- target vegetation may show signs of chemical burns. Moderate visual effects will likely occur in areas where large infestations of exotic plants respond to chemical treatment. These areas may be devoid of vegetation until native vegetation becomes reestablished through reseeding and other treatments.

No known changes in air quality will occur from biological control treatments. Prescribed burns may result in some temporary increases in particulates and other combustion by- products, and reduced visibility from smoke. Ability to see scenic vistas during prescribed fires may also be reduced from smoke generation. However,

prescribed fires will be timed during periods when the potential for dispersion of smoke will be limited. Potential effects from burning vegetation that has been treated with pesticides are expected to be short- term, minor, and local. By- products generated through combustion of treated vegetation will vary. Some pesticides are almost entirely destroyed by fire. Since pesticides will be applied in small quantities in accordance with pesticide labels, levels of any by- products generated from burning of treated vegetation will not likely be detectable. The impacts of exotic plant management on air and visual resources will therefore be directly adverse, site- specific to local, short- term, and negligible to moderate.

## **Water Resources**

There may be some impacts to water quality, including temporary increases in suspended solids. Irrigation will likely have negligible effects on surface water flows since no surface water depletions or accretions will occur under this alternative. Restoration activities, such as reseeding and irrigation, will have a beneficial effect of promoting the reestablishment of native vegetation, which could help reduce erosion and sedimentation in surface waters. Minor mechanical disturbance to native plants from tilling or other ground disturbing activities may result in indirect effects, such as increased sedimentation, to surface waters. ATVs may cross intermittent drainages to access exotic plant populations. Stream crossings may potentially increase localized sedimentation in standing or shallow flowing water at the crossing. However, most drainages are dry during the summer when most exotic plant control efforts occur. Physical changes to water quality resulting from stream crossings will likely be below water quality standards and criteria, and will be within the range of natural variability.

The potential for directly spilling pesticides into surface waters is unlikely. Pesticides will be transferred in controlled settings away from surface water resources. All pesticides will be contained in spill- proof containers and will be handled in accordance with label specifications. Pesticides may pose a minor risk to ground water from leaching. However, to minimize potential environmental effects, pesticides will be selected based on soil texture and depth, distance to water, and environmental conditions. Resource managers considering application of pesticides in areas with low water tables will assess the risk of leaching using the RAVE system or another model. Alternative types of treatments, pesticides, or pesticide application rates will be considered for areas with high leaching potential. Using these BMPs, the potential for ground water contamination is unlikely.

Loss of vegetation from fire may cause negligible temporary increases in erosion and sedimentation. Changes in water quality (such as an increase in total suspended solids in surface waters) may be measurable and short- term, but could be detected downstream. Runoff from burned areas could contain ash, which will also have a negligible short- term effect on water quality. No known direct impacts to surface waters will occur from biological treatments.

Removal of exotic plants that affect riparian areas (such as purple loosestrife, Russian olive [*Elaeagnus angustifolia*], and tamarisk [*Tamarix* spp.]) will help return some surface waters to natural flows, reduce visual obstructions along riverbanks, and create

additional habitat if these plants are removed from shallow channels. Changes in flows may be detectable in some areas. IPM will help parks achieve the desired condition of perpetuating surface waters and ground waters, restoring natural floodplain values, and preserving natural values of wetlands. The impacts of exotic plant management on water resources will therefore be directly beneficial, directly and indirectly adverse, site-specific to local, short- and long- term, and negligible to moderate.

### **Wild and Scenic Rivers**

Segments of the Missouri and Niobrara Rivers are classified as National Wild and Scenic Rivers. These rivers received this designation because of the degree to which they are free flowing, the degree to which the rivers and their corridors are undeveloped, and the outstanding natural and cultural characteristics of the rivers and their immediate environments. IPM will help these parks achieve the desired condition to have these rivers and their surrounding environments protected for the benefit and enjoyment of present and future generations. Control of purple loosestrife, for example, will have a measurable beneficial effect on the character and value of both the Missouri and Niobrara Rivers. Impacts will be beneficial, short- and long- term, and localized. The impacts of exotic plant management on wild and scenic rivers will therefore be direct beneficial effects, local, short- term and long- term, and moderate.

### **Soils**

There may be some temporary increases in erosion resulting from surface disturbing activities. Cultural treatments may be used at any of the 13 parks. Reseeding and manual and mechanical treatments could cause negligible, temporary disturbance to soil. Effects could include compaction of soil and disturbance to upper soil profiles. ATVs may be used for the application of pesticides. Effects could include compaction of soil and disturbance to upper soil profiles.

There is a low potential for accidental spills of pesticides that could temporarily contaminate soils. Application of pesticides will increase pesticide levels in soils. The potential for the build- up of pesticides in soils is low because BMPs will account for both soil properties and pesticide properties as part of planning. Parks may also monitor pesticide levels in soils, as needed. No known direct impacts to soils will occur from biological treatments.

Prescribed fires could increase nutrient availability in soil at any of the 13 parks. The beneficial effects on soil productivity will be readily apparent for one to several growing seasons. Loss of vegetation from fire could cause negligible temporary increases in erosion and sedimentation at any of the 13 parks. Mechanical disturbance to soils during fire fighting or cleanup will be negligible. Impacts will be site- specific and short-term. The impacts of exotic plant management on soil resources will be directly adverse and beneficial, site- specific, short- term to long- term, and negligible to moderate.



## **Vegetation**

IPM will help parks achieve the desired condition to have, as parts of the natural ecosystems of parks, all native plants maintained. Intrusion into parks by personnel conducting IPM will cause short- term, direct impacts to vegetation from foot and ATV traffic en route to exotic plant populations. Individual plants will be trampled, resulting in no effect, reduced vigor, or death depending on the stature and structure of the plant and the amount and duration of pressure applied. Tilling or other ground disturbing activities may cause minor mechanical disturbance to individual native plants. These impacts will be adverse, short- term, and slight to individual plants. Non- target plants subjected to pesticide drift could experience no effect, reduced vigor, or death depending on the sensitivity of the plant species to the specific pesticide and the dose to which the plant is subjected. Overall, use of chemical controls will have infrequent adverse, short- term, minor impacts on individual plants because of drift or non- target treatment during the course of spraying targeted species. Infrequent impacts to individual plants generally have negligible to minor effects on plant populations, plant communities, or ecological processes.

Because biological control agents are specific to individual species of exotic plant, there will be negligible impacts to non- target plant species. Impacts to target plants will be direct and beneficial. Any biological control agent used will be host- specific so each biological control agent will only attack one plant species (the host, or target exotic plant).

The effect of fire on plants is species- specific. Fire may either increase or reduce germination and vigor of plants. Prescribed fire may have adverse impacts on some individual plants, but will affect a relatively small portion of the overall population. Prescribed fire will have the overall direct effect of removing stagnant, dead plant accumulations while converting that biomass to ash and charcoal. Fires tend to increase species diversity and reduce woody species relative to grass and forbs species. The beneficial effects on soil productivity will be readily apparent for one to several growing seasons. Prescribed fire could also encourage the establishment of exotic plants following fires. However, exotic plant infestations will be evaluated prior to the burn to determine whether exotic plant species are present that may increase following fire. These areas may be excluded, or follow- up treatments will be used to control exotic plants after fires, as needed.

Reseeding and irrigation could have a beneficial effect of promoting the reestablishment of native vegetation at any of the 13 parks. By controlling exotic plants using IPM, native plant communities at all 13 parks will be rehabilitated, thus benefiting native plant species and the habitat they provide. The minor short- term adverse impacts will be outweighed by the long- term benefits to vegetation. The impacts of exotic plant management on vegetation resources will therefore be directly beneficial and adverse, site- specific and local, short- term to long- term, and negligible to moderate.

## **Wetlands and Floodplains Values**

Ground disturbing activities may cause negligible mechanical disturbance to individual native wetland plants. These impacts will be adverse, short- term, and negligible to individual plants. Activities that will have greater impacts, such as tilling, will not be used in wetland or riparian areas. U.S. Army Corps of Engineers permits will not be required for any proposed IPM treatments. ATVs will be routed to avoid palustrine wetlands. ATVs may cross intermittent drainages to access exotic plant populations. Stream crossings could potentially increase site- specific sedimentation in standing or shallow flowing water at the crossing. However, most drainages are dry during the summer when most exotic plant control efforts occur.

Non- target wetland plants subjected to pesticide drift could experience no effect, reduced vigor, or death depending on the sensitivity of the plant species to the specific pesticide and the dose to which the plant was subjected. However, infrequent impacts to individual plants generally do not impact plant populations, plant communities, or ecological processes.

Because biological controls target a specific exotic plant, there will be no expected impacts to non- target wetland plant species. Impacts to target plants will be direct and beneficial to wetland communities. The minor short- term adverse impacts will be outweighed by the long- term benefits of habitat rehabilitation. The impacts of exotic plant management on wetlands and floodplains will be directly beneficial and adverse, site- specific to local, short- term to long- term, and negligible to moderate.

Fire will primarily be used to remove undesirable wetland vegetation. Fires have the direct effect of removing stagnant, dead plant accumulations while converting that mass to ash and charcoal. Fires tend to increase species diversity and reduce woody species relative to grass and forb species. Wetland or floodplain functions will be increased. The effect of fire on individual plants is species- specific. Fire may either increase or reduce germination and vigor of plants. Prescribed fire may have adverse impacts on some individual wetland and floodplain plants, but will affect a relatively small portion of the overall population.

By controlling exotic plants, wetland communities and floodplains will be rehabilitated, thus benefiting native plant species and the habitat they provide. In some areas, IPM may enhance the existing wetland areas or floodplain functions. Removal of exotic plants that affect riparian areas (such as purple loosestrife, Russian olive, and tamarisk) will help enhance riparian habitat. Impacts will be site- specific and effects to individual plants could be long- term. IPM will help parks achieve the desired condition to have, as parts of the natural ecosystems of parks, all native animals maintained. By controlling exotic plants and promoting healthy native plant communities, wildlife habitat will be rehabilitated at all 13 parks. These beneficial effects will be detectable in some areas, and may benefit wildlife populations that use these areas over the long- term. The minor, short- term adverse impacts will be outweighed by the long- term benefits of habitat rehabilitation. The impacts of exotic plant management on terrestrial wildlife will be directly beneficial and adverse, site- specific and local, short- term and long- term, and negligible to moderate.

## Terrestrial Wildlife

Intrusion into parklands by personnel conducting IPM will cause short- term negligible harassment to wildlife species. There may be some escape flight response exhibited by wildlife during these activities, but this will produce negligible short- term, site- specific, adverse impacts in the form of unnecessary energy expenditure. Reseeding and irrigation could have a beneficial effect of promoting the reestablishment of wildlife habitat at any of the 13 parks. Manual or mechanical treatments could have site- specific adverse impacts on ground nesting birds or burrowing animals. BMPs will keep these effects site- specific and of little consequence to the species' population.

It is unlikely that terrestrial wildlife species will receive direct exposure to pesticides during application because they will likely leave the area or will return to burrows during periods of increased human activity. However, insects and small mammals may be directly exposed to pesticides on rare occasions. Pesticides will be applied in accordance with label specifications, and because any nests or burrows encountered will be avoided, there is low potential for exposure to acute levels of pesticides. It is also unlikely that wildlife will be overexposed over time if the pesticides are used according to label specifications and BMPs. Impacts from chemical treatments will be small, infrequent, site- specific, and short- term.

Fire can cause direct mortality to small mammals; some invertebrates, reptiles, and amphibians; and non- mobile species of wildlife. Effects to some wildlife will be detectable, but will be small and will not lead to population- level effects. Direct mortality from fire does not usually occur to most ungulate or bird species because they are able to move to other areas. However, less mobile species such as small mammals, reptiles, amphibians, and invertebrates may experience individual mortalities during fires. Because the intensity, duration, and timing of prescribed fires will be controlled, population- level effects are not likely. Wildlife may also be indirectly impacted by fire through reduction of potential nesting, resting, and foraging habitat, and increased predation. Fire may also cause mobile animals, such as ungulates, to concentrate in specific areas immediately after the burn to search for food or cover. Impacts will be site- specific and short- term. Fires that create a mosaic of burned and unburned areas may directly benefit ground nesting bird, small mammal, and ungulate populations. Fire may also indirectly benefit carnivore species that feed on small mammals and ungulates.

IPM will help parks achieve the desired condition to have, as parts of the natural ecosystems of parks, all native animals maintained. By controlling exotic plants and promoting healthy native plant communities, wildlife habitat will be rehabilitated at all 13 parks. The additional biomass created by the introduction of biological control agents may also benefit mammal and bird species that prey on terrestrial insects. These beneficial effects will be detectable in some areas, and may benefit wildlife populations that use these areas over the long- term. The minor, short- term, adverse impacts will be outweighed by the long- term benefits of habitat rehabilitation. The impacts of exotic plant management on terrestrial wildlife will therefore be directly beneficial and adverse, site- specific and local, long- term, and moderate.

## **Aquatic Wildlife**

Manual and mechanical treatments will cause negligible impacts to aquatic wildlife and fisheries because surface disturbance in riparian areas will be avoided. Mechanical and manual treatments will not likely have measurable impacts to native fish or aquatic wildlife species, their habitats, or the natural processes sustaining them.

It is unlikely that aquatic wildlife species will receive direct exposure to pesticides during application, and it is also unlikely that they will be overexposed if the pesticides are used according to label specifications and BMPs. Pesticides registered for use in or near water (such as glyphosate) have low toxicity and will not pose a risk to aquatic communities or other standing water environments (NPS 2003h) and will not likely be detectable. The use of pesticides will not be expected to have any long- term adverse impacts on native species, their habitats, or natural processes sustaining them.

Direct mortality from fire is unlikely for aquatic organisms. Aquatic organisms may be indirectly affected by temporary loss of vegetation, which could cause minor increases in erosion and sedimentation. Increases in sedimentation will be site- specific and short term and may be detectable, but will not be outside the range of natural variability.

By controlling exotic plants and promoting healthy native riparian communities, aquatic communities at any of the 13 parks could indirectly benefit from IPM. Indirect benefits include restoration of ecosystem structure and surface water hydrology. Direct beneficial effects will be detectable in some areas that have reduced sedimentation once native plant communities are rehabilitated. The additional biomass created by the introduction of biological control agents may indirectly benefit some aquatic species that prey on terrestrial insects. The minor short- term adverse impacts will be outweighed by the long- term benefits to aquatic habitat. The impacts of exotic plant management on aquatic wildlife and fisheries will therefore be indirectly beneficial, directly adverse, site- specific and local, short- term and long- term, and negligible to moderate.

## **Wilderness**

The reduction or elimination of exotic plants will ultimately restore the naturalness sought by visitors to the Theodore Roosevelt National Park Wilderness. There will be a beneficial change in wilderness character and quality that will be measurable and site- specific. The minor, short- term, adverse impacts will be outweighed by the long- term benefits to wilderness preservation. IPM will not inhibit the maintenance of the desired condition to have no commercial enterprise and no permanent roads within any wilderness areas, except as necessary to meet minimum requirements for the administration of the area.

A temporary change in wilderness character and associated values will occur during exotic plant management activities. Some aspects of IPM may intrude on the wilderness experience. The presence of mechanized equipment, such as aircraft, will be most notable. The presence of park personnel and equipment could impact visitor solitude and self- discovery in the Theodore Roosevelt National Park Wilderness. The site- specific, short- term impacts on wilderness will be noticeable to wilderness visitors.

However, the short- term impacts of exotic plant management will be outweighed by the beneficial effects. The impacts of exotic plant management on wilderness will therefore be directly and indirectly adverse and beneficial, site- specific, short- term and long- term, and moderate.

### **Prime and Unique Farmlands**

IPM will not inhibit the maintenance of the desired condition to have no unnecessary and irreversible conversion of farmland to nonagricultural. About 640 acres along the Niobrara River are irrigated cropland and meet the National Resource Conservation Service (NRCS) definition of prime farmland. According to NRCS, no other soils in the 13 parks are classified as prime or unique farmland. No prime or unique farmland will be converted to a nonagricultural use. The impacts of exotic plant management on prime and unique farmlands are therefore negligible.

### **Visitor Use and Experience**

In general, IPM will have a long- term, beneficial effect on visitor use and experience by returning 13 parks to a more natural state. Many parks receive complaints from visitors when they observe exotic plants within the park. Rehabilitation of native plant communities will be readily apparent to some visitors and likely long- term in some areas. Visitors will likely be aware of the exotic plant management activities and short- term disturbances associated with treatments. However, visitors will also likely observe the beneficial effects of IPM and will also likely express positive opinions about the changes. The impacts of exotic plant management on visitor use and experience will therefore be directly beneficial and adverse, site- specific, short- term to long- term, and moderate.

### **Soundscapes**

Parks will disseminate information about IPM programs to educate the public on the need for ATVs and aircraft. Some degradation caused by noise (undesirable human- caused sound) will result from operation of equipment such as ATVs and aircraft. Human- caused noise will be short- term and site- specific. Human- caused noise will be audible during periods of equipment operation between sunrise and sunset. No human- caused noise resulting from IPM will be audible between sunset and sunrise. IPM will not inhibit the maintenance of the desired condition to have, to the greatest extent possible, the natural soundscapes of parks protected. The impacts of exotic plant management on soundscapes will therefore be temporarily adverse, site- specific, short- term, and minor.

### **Park Operations and Land Use**

Each park will disseminate consistent information to the public about current and proposed exotic plant management activities. Collaboration with exotic plant management experts both within and outside the NPS will also be ongoing. Improved exotic plant management will improve relations with park neighbors as well as state and local officials who have expressed concern about exotic plants spreading from each park

onto neighboring lands. Collaboration with exotic plant management specialists and other parks will improve information exchange and will help parks stay current on new exotic plant treatment technologies.

Implementation of an IPM plan could slightly affect park operations. Funding for its implementation will come from new sources or continuation of existing funding used for exotic plant management. There will likely be a negligible increase in administrative support for personnel and procurement as well as increased storage space needs, office space and equipment needs, vehicle support, and fuel use. However, parks already provide these services and can absorb the small increases associated with an increase in the IPM program. The impacts of exotic plant management on park operations and land use will therefore be site- specific, short- term, and negligible.

### **Ethnographic Resources**

IPM will not inhibit the maintenance of the desired condition to have access to and ceremonial use of Indian sacred sites by Indian religious practitioners accommodated. IPM will not adversely impact areas where American Indians gather plants. Traditional use plants identified by tribes will be avoided to the extent feasible to minimize impacts. These impacts will be adverse, short- term, and minor to individual plants. Infrequent impacts to individual plants generally do not impact plant populations, plant communities, or ecological processes. The impacts of exotic plant management on Native American concerns will therefore be direct, site- specific, short- term, and minor.

### **Social and Economic Conditions**

The reduction of exotic plants in each park will decrease the spread of exotic plants onto private or federal lands adjacent to each park and reduce the individual landowner's exotic plant control costs. While these landowners will benefit, there will be no appreciable effect on local communities' overall population, income, or employment base. However, limiting the potential for exotic plants to spread from parks to areas outside park unit boundaries will help maintain property values. Some parks may use concessionaires to assist with IPM treatments, which will have beneficial effects for local businesses. IPM will not inhibit the maintenance of the desired condition to have an understanding of parks by park visitors, the non- visiting public, gateway communities and regions, and human interactions with park resources provided. The impacts of exotic plant management on social and economic conditions will be indirectly beneficial, local, long- term, and moderate.

***Degree of effect on public health or safety:*** NPS Management Policies (2001) advocate a safe work environment for employees and a safe experience for park visitors. The equipment proposed for use such as hand tools, chainsaws, portable sprayers, ATVs, and aircraft are all standard devices with established safety protocols. Training on the proper use of equipment is included as part of the preferred alternative. Safety protocols for storing, mixing, transporting, handling spills, and disposing of unused pesticides and containers will be followed at all times. The pesticides proposed for use have very low acute toxicity to humans and personal protective equipment (PPE) will be used during application to reduce the potential for chronic exposure of employees. Safety protocols

for storing, mixing, transporting, handling spills, and disposing of pesticides and containers are an integral part of the preferred alternative. Treated areas subject to visitation will be marked during the no-entry period (as described on the pesticide label or until dry) to advise visitors against entering treated areas and thus exposing themselves to the chemicals. Training will be required prior to use of pesticides. Meteorological conditions will be accounted for in planning to decrease the risk of pesticide drift. Because of these and other safety precautions, the preferred alternative will not affect human health or safety for park employees or visitors.

***Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:*** Cultural resources (including archaeological resources, historic structures and buildings, cultural landscapes, and ethnographic resources); prime and unique farmlands; wild and scenic rivers; adjacent lands; wetlands; and wilderness will not be affected.

***Degree to which effects on the quality of the human environment are likely to be highly controversial:*** There were no highly controversial effects identified during either preparation of the environmental assessment or the public review period.

***Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks:*** There were no highly uncertain, unique, or unknown risks identified during either preparation of the environmental assessment or the public review period.

***Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:*** The preferred alternative neither establishes a National Park Service precedent for future actions with significant effects nor represents a decision in principle about a future consideration.

***Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:*** Cumulative effects were determined by combining the effects of the alternative with other past, present, and reasonably foreseeable future actions at each park unit. A number of past, ongoing, or reasonably foreseeable future actions within each park unit and in the surrounding region of each park unit were identified and analyzed in the environmental assessment. Cumulative impacts vary by resource; however, cumulative impacts are not expected to be greater than moderate in intensity. The relative adverse contributions of the preferred alternative to the overall cumulative impacts are predicted to be negligible. However, in some cases the preferred alternative will have a beneficial contribution to the overall cumulative impacts.

***Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical places:*** Impacts to cultural resources and archaeological sites will be negligible to minor. IPM will also not inhibit the maintenance of the desired condition to have archaeological sites protected in an undisturbed condition unless it is determined through formal processes that disturbance

or natural deterioration is unavoidable. All surface disturbing activities will be avoided in areas where cultural or historic resources are identified or are known to occur.

Surface disturbing activities and prescribed fires may physically impact unknown cultural resources. The use of pesticides also may impact unknown cultural resources. However, BMPs will be implemented to minimize the potential for accidental impacts to unknown resources. Under the preferred alternative, areas that may contain cultural or historic resources and that have not been previously studied will be surveyed. If cultural or historic resources are identified or are known to occur, all surface disturbing activities will be avoided in these areas. Use of pesticides within the boundaries of the cultural resource or historic resource sites will be restricted. Because of unknown effects, pesticides will not be directly applied to historic structures with limestone grout, hearth features, or cultural resources comprised of organic material, bone, pollen, seeds, and materials made from plant fiber. However, pesticides may be used in lands surrounding cultural or historic sites in accordance with BMPs. In the event that cultural resources are encountered during treatments, all work will stop immediately and will not continue until the site can be evaluated and cleared by a qualified specialist.

Each of the 13 parks initiated and completed consultation as required under Section 106 of the National Historic Preservation Act (NHPA). Letters and copies of the environmental assessment were submitted to the State Historic Preservation Offices (SHPO) of Montana, Nebraska, North Dakota, South Dakota, and Wyoming for review and comment. The NPS determined that this programmatic approach to the treatment of exotic plants will have No Adverse Effect on the cultural qualities and features within the 13 parks included in this plan, with the realization that at some point additional consultation may be needed should unknown sites be discovered. Concurrence with this determination was received from the various SHPO as follows:

- Montana SHPO – concurrence received for Fort Union Trading Post National Historic Site on May 23, 2005.
- Nebraska SHPO – concurrence received for Agate Fossil Beds National Monument, Missouri National Recreational River, Niobrara National Scenic River, and Scotts Bluff National Monument on May 25, 2005.
- North Dakota SHPO – concurrence was received for Knife River Indian Villages National Historic Site, Theodore Roosevelt National Park, and Fort Union Trading Post National Historic Site on August 25<sup>th</sup>, 2005.
- South Dakota SHPO – concurrence was received for Wind Cave National Park on July 29<sup>th</sup>, 2005, Missouri National Recreational River on August 9<sup>th</sup>, 2005, Mount Rushmore National Memorial on August 31, 2005, and for both Jewel Cave National Monument and Minuteman Missile National Historic Site on August 5<sup>th</sup>, 2005.
- Wyoming SHPO – concurrence was received for Devils Tower National Monument on March 21, 2004 and for Fort Laramie National Historic Site on June 22, 2005.

***Degree to which the action may adversely affect an endangered or threatened species or its critical habitat:*** The biological assessment of federally threatened,



endangered, and candidate species describes accounts of 14 species that occur or potentially occur within at least one of the 13 parks included in this plan.

In accordance with the Endangered Species Act, Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) concerning impacts to threatened and endangered species was initiated during the initial drafting of this EPMP/EA. In December of 2003, public scoping letters describing the proposed action were sent to the Nebraska, North Dakota, South Dakota, and Wyoming Ecological Services Offices of the USFWS. Responses to the public scoping letter, including threatened, endangered, and candidate species lists, were received from the North Dakota and Wyoming Service Offices on January 6 and January 9, 2004, respectively. Letters initiating informal consultation and requesting a list of federal threatened and endangered species were sent to the Nebraska and South Dakota Service Offices on March 3, 2003. Responses to the informal consultation letters, including threatened, endangered, and candidate species lists, were received from these offices on March 15 and March 19, 2004, respectively.

A biological assessment was then prepared that included determination of effect for each of the 14 species.

Specific conservation measures will be implemented to minimize potential impacts to threatened, endangered, and sensitive (TES) species. General BMPs developed to minimize potential impacts to TES species include:

- Personnel will be trained to identify and avoid TES species. If any species are identified in the field, treatments will be halted until buffer areas are established. ATVs and off- road vehicle traffic will be used on a limited basis in areas where TES plants are known to occur or have the potential to occur.
- Restoration activities, such as reseeding and irrigation, will be used where necessary to promote the reestablishment of native plant communities. To avoid take, activities near TES species habitat will be avoided during sensitive periods. Any manual or mechanical methods will be highly selective for individual plants to minimize the potential for impacting TES plants. Personnel will be trained to identify and avoid TES species if encountered. Tilling will not be used in areas where TES plants are known to occur or have the potential to occur.
- Cultural treatments will not likely have any measurable impacts on native fish or aquatic wildlife species, their habitats, or natural processes sustaining them. Livestock will be actively managed to have negligible potential impacts to stream banks and river bottom habitats. Impacts will be site- specific and short- term. The impacts of irrigation on aquatic wildlife and fisheries will therefore be directly adverse, site- specific, short- term, and negligible.
- Chemicals will only be used when determined necessary, or if there are no other acceptable or feasible treatment options. Species- specific BMPs have been developed, in addition to general BMPs, to minimize the potential exposure of TES species to pesticides. Application of pesticides near TES species' habitat will be avoided during sensitive periods. If hand applications are used to apply

pesticides, a 20- foot radius no- spray zone will be established around TES plants. Hand spraying allows for treatment of individual plants and the spray can be directed within an inch of the target plant. If boom treatments are used (ATVs or aircraft) to apply pesticides, a 50- foot no- spray zone will be established around these plants.

- Any biological control agents released in a park will be approved by APHIS with no demonstrated affinity for TES plant species.
- Project- specific prescribed fire plans will be developed for each prescribed fire to limit the potential for high- intensity fires. Prescribed fires will not be conducted in TES species' habitat during active periods. Project specific prescribed fire plans will be designed to prioritize the protection of habitat for TES species.
- In addition, species- specific BMPs will be implemented for each TES species. BMPs have been developed for the bald eagle, whooping crane, interior least tern, piping plover, black- footed ferret, gray wolf, Preble's meadow jumping mouse, pallid sturgeon, Topeka shiner, scaleshell mussel, American burying beetle, western prairie fringed orchid, Ute ladies'- tresses orchid, and Colorado butterfly plant.

Additional conservation measures will be implemented for each species. Species-specific measures are described below. Some exotic plant management activities may be necessary within buffer zones established for each species. Any activities that are likely to cause a take of a species, as defined by the ESA, will be coordinated with the appropriate Service Field Office before any actions are taken. If these activities may affect - are likely to adversely affect a species, formal consultation will be conducted.

#### Bald Eagle (*Haliaeetus leucocephalus*)

- Treatment areas will be evaluated for suitable bald eagle nesting and roosting habitat prior to conducting exotic plant management activities.
- A disturbance- free buffer area will be maintained around any active bald eagle nests and winter roost sites. The Wyoming and North Dakota Service Field Offices recommend that a 1 mile buffer area be established around active bald eagle nests or winter roost sites. The Nebraska Field Office recommends a disturbance- free buffer area of 1/2 mile be established around active bald eagle nests or winter roost sites. The South Dakota Field Office recommends a buffer zone of one- quarter mile around active nests or winter roost sites. If a disturbance free- buffer zone is not feasible, then activity should be conducted outside of the active breeding period (February 15 to August 15) to protect nesting birds, and the winter roosting period (November 1 through April 15) to protect roosting birds.
- Clearing of live or dead conifer or cottonwood trees greater than 12 inches in diameter at breast height along streams, rivers, and wetlands will be avoided to the extent possible to help preserve potential bald eagle roosting or nesting habitat.

#### Whooping Crane (*Grus americana*)

- Treatment areas will be evaluated for suitable whooping crane feeding and roosting areas prior to conducting exotic plant management activities.
- If whooping cranes are present, a 1/2 mile buffer area will be established around any feeding or roosting areas. No exotic plant management activities will occur within this area while whooping cranes are present.
- A no-flight aerial pesticide application buffer area of 1/2 mile will be established around any nesting or foraging areas when whooping cranes are present.

#### Interior Least Tern and Piping Plover (*Sterna antillarum athallasos* and *Charadrius melodus*)

- Treatment areas will be evaluated for potential piping plover and interior least tern habitat before exotic plant treatment.
- If interior least tern or piping plover are found, a buffer zone of 1/4 mile will be established around any active nesting colonies. No exotic plant management activities will occur within this buffer zone during the active breeding period (from April 15 to August 15).
- A no-flight buffer area of 1/2 mile will be established around any active colonies.

#### Black-footed Ferret (*Mustela nigripes*)

- In the event that black-footed ferrets are located, the USFWS will be consulted to verify the occurrence. In addition no disturbance will be allowed within prairie dog colonies inhabited by black-footed ferrets to comply with the ESA.
- Because some black-tailed prairie dog colonies may provide habitat for future black-footed ferret reintroduction, a number of management practices will be implemented to minimize potential impacts to prairie dog colonies. These practices include:
  - Physical disturbance to prairie dog towns or complexes will be avoided wherever possible.
  - The use of mechanical treatments such as tilling will not be used in prairie dog colonies.
  - The use of pesticides in prairie dog colonies will only be considered if no other alternatives are feasible.
  - Only those pesticides that have a low potential toxicity, such as those that contain glyphosate as the active ingredient will be used within prairie dog colonies.
  - Herbicides that do not readily break down in soil will not be used in prairie dog colonies.

#### Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*)

- Fort Laramie National Historic Site will be evaluated to determine if the park contains potential Preble's mouse habitat. Fort Laramie was unable to complete a survey for the Preble's mouse in 2004, but will likely complete a survey in the near future.
- If the Preble's mouse is not found during future surveys, and if the USFWS concurs with the survey results, no conservation measures will be required to protect the Preble's mouse.

- Until surveys are conducted and if the Preble's mouse is found during future surveys, the following conservation measures will be implemented to protect Preble's mouse habitat:
  - All exotic plant management activities within Preble's mouse habitat will be conducted in accordance with the final section 4(d) rule. Under this rule, noxious weed control activities must be conducted in accordance with: federal law, including U.S. Environmental Protection Agency (EPA) label restrictions; applicable state laws for noxious weed control; applicable county bulletins; herbicide application guidelines as prescribed by herbicide manufacturers; and any future revisions that apply to the pesticides proposed for use within the species' range. In the event of future revisions to EPA label restrictions and pesticide application guidelines, Fort Laramie will follow these revisions to assure protection of the Preble's meadow jumping mouse.
  - Treatment activities within Preble's mouse habitat at Fort Laramie will be limited to minimize the potential for loss of vegetation. The unnecessary eradication of entire plant communities will be avoided and methods to reduce impacts to non- target species will be employed whenever possible. Broadcast spraying using ATVs will only be used on a small scale to treat high- density stands of exotic plants in uplands, and will not be used within riparian areas. Backpack hand sprayers will be used to treat exotic plants within riparian areas.
  - Selective pesticides will be used to limit potential impacts to non- target native plants at Fort Laramie. For example, herbicides that target broad-leaved exotic plants and do not damage native grasses will be used wherever possible to treat broad- leaved exotic plants. Treated areas will be monitored to evaluate the reestablishment of native plants. Where needed, treated areas may be reseeded using native species to facilitate recovery of native plant communities.
  - Mowing will not be conducted within riparian areas at Fort Laramie. Mowing treatments in upland areas located within Preble's mouse habitat will be timed so that they do not coincide with active periods of the Preble's mouse.
  - Fort Laramie will not use prescribed fires to manage exotic plants under this plan.

#### Gray Wolf (*Canis lupus*)

- Although unlikely, gray wolves may occasionally be observed within Fort Union Trading Post National Historic Site and Theodore Roosevelt National Park. If wolves are still present in the area, no exotic plant management activities will be conducted within the area of any dens, foraging areas, or rendezvous sites.
- In the event that a resident population of gray wolves establishes within one of these park units, no exotic plant management activities will be conducted without first consulting with the appropriate USFWS Field Office.

#### Topeka Shiner (*Notropis topeka*)

- Missouri National Recreational River and the Niobrara National Scenic River will be evaluated to determine if suitable Topeka shiner habitat is present before

application treatment commences. This will be done by contacting South Dakota State University to access their geographic information system (GIS) program that predicts Topeka shiner habitat presence in eastern South Dakota rivers and streams (Wall et al. 2001) or Nebraska Game and Parks Commission to identify current and historic records of Topeka shiner presence.

- If Topeka shiners have been identified, or if suitable habitat is predicted with an 80 percent confidence level from the GIS program, then consultation will take place with biologists from the appropriate USFWS Field Office before exotic plant management activities will begin.
- Physical disturbances to riparian areas located adjacent to tributaries to the Missouri and Niobrara Rivers will be avoided to the maximum practical extent to limit potential impacts to the Topeka shiner.

#### Pallid Sturgeon (*Scaphirhynchus albus*)

- Channel island tips will not be altered in any manner.
- Channel alternations that limit or eliminate shallow, sloping bank habitat will be avoided.
- No treatments that might alter flows in pallid sturgeon habitat (such as the diversion of water for irrigation) are allowed under the proposed action.
- A NPS biologist will consult with the USFWS before directly applying any pesticides directly to waters that include pallid sturgeon habitat.

#### Scaleshell Mussel (*Leptodea leptodon*)

- NPS staff responsible for exotic plant management at Missouri National Recreational River will receive training on how to identify the scaleshell mussel and its potential habitat.
- Physical disturbance to scaleshell mussel habitat will be avoided.
- In the event that a scaleshell mussel is found within a park unit, no exotic plant management activities will be conducted without first consulting with the appropriate USFWS Field Office.

#### American Burying Beetle (*Nicrophorus americanus*)

- NPS staff responsible for exotic plant management at Missouri National Recreational River and the Niobrara National Scenic River will receive training on how to identify the American burying beetle and its potential habitat.
- If populations of the American burying beetle are identified, no exotic plant management activities will be conducted without first consulting with the appropriate USFWS Field Office.

#### Ute ladies'- tresses Orchid (*Spiranthes diluvialis*)

- NPS staff responsible for exotic plant management at Agate Fossil Beds National Monument, Devils Tower National Monument, and Fort Laramie National Historic Site will receive training on how to identify the Ute ladies'- tresses orchid and its potential habitat. Potential habitat includes wetlands and associated wet meadow areas.

- If populations of the Ute ladies'-tresses orchid are identified, conservation measures developed for threatened and endangered plants will be implemented (see below).

#### Western Prairie Fringed Orchid (*Platanthera praeclara*)

- NPS staff responsible for exotic plant management at Missouri National Recreational River and the Niobrara National Scenic River will receive training on how to identify the western prairie fringed orchid and its potential habitat.
- If populations of the western prairie fringed orchid are identified, conservation measures developed for threatened and endangered plants will be implemented (see below).

#### Colorado Butterfly Plant (*Gaura neomexicana coloradensis*)

- NPS staff responsible for exotic plant management at Fort Laramie National Historic Site will receive training on how to identify the Colorado butterfly plant and its potential habitat.
- If populations of the Colorado butterfly plant are identified, conservation measures developed for threatened and endangered plants will be implemented (see below).

#### Threatened, Endangered, and Sensitive Plants

- If portable spraying is used to apply pesticides, establish a 5-foot no-spray zone around threatened or endangered plants for treatments involving application of pesticides. Portable spraying allows for treatment of individual plants and the spray can be directed within an inch of the target plant.
- If boom treatments are used (ATVs or aircraft) to apply pesticides, establish a 50-foot no-spray zone around threatened and endangered plants.
- Tilling will not be used in areas where threatened, endangered, and sensitive plants are known to occur or have the potential to occur.
- ATVs and off-road vehicle traffic will not be used in areas where threatened, endangered, and sensitive plants are known to occur.
- ATVs and off-road vehicle traffic will be used on a limited basis in areas where threatened, endangered, and sensitive plants have the potential to occur.
- Pesticides will be applied in accordance with pesticide labels.
- Pesticide applicators will receive training on identification of threatened, endangered, and sensitive plants. If these plants are identified in the field, treatments will be halted until the aforementioned buffer areas are established.

Accounting for these BMPs, potential impacts to TES species are described below:

- At those parks where TES species are present, these species may benefit from the restoration of native plant communities and wildlife habitat. These direct beneficial effects may be detectable in some areas, and will benefit TES populations using those areas. The minor and short-term impacts will be outweighed by the long-term benefits of habitat rehabilitation. The impacts of exotic plant management on TES species will therefore be directly beneficial, site-specific or local, long-term, and moderate.

- Restoration activities, such as reseeding and irrigation, will have a direct beneficial effect of promoting the reestablishment of native vegetation. The impacts of cultural treatments on TES will therefore be directly beneficial, site-specific, short-term, and minor.
- No direct impacts to TES wildlife or plants are expected because of proposed mitigation measures. No escape flight response is expected from TES species because BMPs will be followed to avoid disturbing these species. The impacts of manual and mechanical treatments on TES species will therefore be indirect, site-specific, short-term, and minor. It is unlikely that TES will receive direct exposure to pesticides during application, and it is also unlikely that they will be overexposed to pesticides over time when used under label specifications and BMPs. Because no pesticides will be applied within buffer areas during sensitive periods, potential risks to TES from pesticide application activities are unlikely. The impacts of chemical treatments on TES will therefore be directly and indirect, site-specific, short-term, and minor.
- Because biological control agents are specific to a target exotic plant, there will be no known direct impacts to non-target TES species. The additional biomass created by the introduction of biological control agents may indirectly benefit TES mammal and bird species that prey on terrestrial insects. The impacts of biological treatments on TES species will therefore be indirectly beneficial and minor.
- The additional biomass created by the introduction of biological control agents may benefit TES species that prey on terrestrial insects. Impacts will be beneficial, short- or long-term, and site-specific. Impacts will be similar to Alternative 1. The impacts of biological treatments on TES species will therefore be indirectly beneficial, site-specific, short-term, and minor.
- Fire will not directly affect TES species because it will not be used in areas that could affect these species during sensitive periods. The impacts of prescribed fire on TES species will therefore be directly and indirect, site-specific, short-term, and minor.

The following determinations were made in the biological assessment:

Bald eagle (*Haliaeetus leucocephalus*)

May affect, but is not likely to adversely affect

Whooping crane (*Grus americana*)

May affect, but is not likely to adversely affect

Interior least tern (*Sterna antillarum athallasos*)

May affect, but is not likely to adversely affect

Piping plover (*Charadrius melodus*)

May affect, but is not likely to adversely affect

Black-footed ferret (*Mustela nigripes*)

May affect, but is not likely to adversely affect

Preble's meadow jumping mouse (*Zapus hudsonius preblei*)

May affect, but is not likely to adversely affect

Gray wolf (*Canis lupus*)

May affect, but is not likely to adversely affect

Topeka shiner (*Notropis Topeka*)

May affect, but is not likely to adversely affect

Pallid sturgeon (*Scaphirhynchus albus*)

May affect, but is not likely to adversely affect

Scaleshell mussel (*Leptodea leptodon*)

May affect, but is not likely to adversely affect

American burying beetle (*Nicrophorus americanus*)

May affect, but is not likely to adversely affect

Ute ladies'-tresses orchid (*Spiranthes diluvialis*)

May affect, but is not likely to adversely affect

Western prairie fringed orchid (*Platanthera praeclara*)

May affect, but is not likely to adversely affect

Colorado butterfly plant (*Gaura neomexicana coloradensis*)

May affect, but is not likely to adversely affect

Concurrence with the above determinations was received from all four state USFWS offices as follows:

- Nebraska USFWS Field Office - concurrence received on July 22, 2004
- South Dakota USFWS Field Office - concurrence received on August 13, 2004
- North Dakota USFWS Field Office - concurrence received on August 23, 2004
- Wyoming USFWS Field Office - concurrence received on September 8, 2004

***Whether the action threatens a violation of federal, state, or local environmental protection law:*** The preferred alternative violates no federal, state, or local environmental protection laws.

In addition to reviewing the list of significance criteria, the National Park Service has determined that implementation of the proposal will not constitute an impairment to any of the 13 parks' resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the environmental assessment, public comments received, relevant scientific studies, and the professional judgment of the decision-



maker guided by direction in the NPS Management Policies (December 27, 2000). Although this plan/project has some negative impacts, in all cases these adverse impacts are the result of actions taken to preserve and restore other park resources and values. Overall, the plan results in benefits to park resources and values, opportunities for their enjoyment, and it does not result in their impairment.

## **PUBLIC INVOLVEMENT**


In December of 2003, a press release announced the initiation of a plan to control exotic plants at 13 parks located in the NGP region. Public scoping letters were sent to 960 individuals and organizations. Interested parties were encouraged to submit comments on this project via mail, email, fax, the project web page, or attendance at one of four open houses. Additional opportunities for comment were afforded to the general public and many exotic plant- oriented and regulatory organizations during the public review period in January and February of 2003. Open house meetings were held in Dickinson, North Dakota, Niobrara, Nebraska, Gering, Nebraska, and Custer, South Dakota.

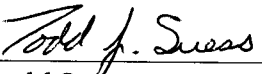
On May 2, 2005, this plan was sent to 93 individuals, including tribal government representatives and members of the public who attended a public open house, provided comments, or specifically asked to receive a hard copy of the plan. Additionally, 12 individuals who asked to receive information about this project electronically were sent an email with information on how to retrieve the plan electronically. The release of the public review document was announced widely through press releases distributed by each park. The plan was posted on the project's web page: <http://www.northerngreatplains-nps.com>. The document then underwent a 45- day public review period from May 2, 2005 to June 15, 2005. A total of 7 responses were received. Three of the letters included support for the preferred alternative. Responses to substantive comments are included in the errata sheets.

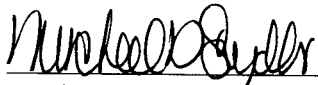
## CONCLUSION

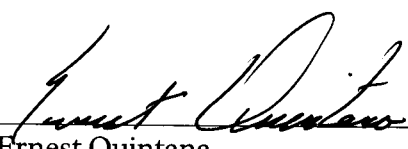
The preferred alternative does not constitute an action that normally requires preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Negative environmental impacts that could occur are negligible to moderate. There are no unmitigated adverse impacts to public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law. In addition to reviewing the list of significance criteria, the National Park Service has determined that implementation of the proposal will not constitute an impairment to any of the 13 parks' resources and values.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Recommended:  Sept. 1, 2005  
Lisa Eckert  
Superintendent, Devils Tower National Monument  
(on behalf of 2 NPS Intermountain Region parks)  
Date

Recommended:  9-7-05  
Todd Suess  
Superintendent, Jewel Cave National Monument  
(on behalf of 11 Midwest Region parks)  
Date

Approved:  9/13/05  
Michael D. Snyder  
Acting Director, NPS Intermountain Region  
Date

Approved:  9-9-05  
Ernest Quintana  
Director, NPS Midwest Region  
Date

**Errata Sheets**  
**Northern Great Plains Exotic Plant Management Plan**  
**and Environmental Assessment, March 2005**

**ERRATA SHEETS**

Page 1- 30, Table 1- 2

Add the following text as the first row under DETO:

Park Unit: DETO

Policy/Plan: Belle Fourche River Watershed Plan

Responsible Agency: Wyoming Department of Environmental Quality

Requirements/Goals/Objectives: The purpose of this plan is to: maintain and/or improve the quality of the Belle Fourche River by identifying possible human pollutant sources and to mitigate those pollutants to an acceptable level; improve water quality and ultimately delist impaired segments of the Belle Fourche River; promote the use of BMPs to improve water quality; develop an effective public education and information program; and continue to sample water quality to monitor implementation of the watershed plan.

Relationship: The EPMP/EA is consistent with the goals within the Belle Fourche River Watershed Plan.

Page 2- 13

Modify the first paragraph as follows:

All parks also collaborate with tribal and other federal officials and state, county, and private entities. The amount of collaboration varies greatly among park units. In some cases, extensive collaboration is necessary in parks with management partnerships such as Niobrara National Scenic River and Missouri National Recreational River. Much of the land included within these parks is privately owned, so exotic plant management requires extensive coordination among the NPS, county weed supervisors, the U.S. Army Corps of Engineers, and private landowners.

Page 2- 27

Add the following text to the end of the third paragraph:

**“Under the preferred alternative, resource specialists at each park will consult with experts from local, state, and federal agencies and universities to identify the most appropriate treatment method or methods for that plant species. Resource specialists will consider the life cycles of each species in selecting treatment methods. Each exotic plant species’ life cycle will directly affect the type and timing of treatment methods that are most effective for that species in a specific park’s environment.”**

Page 2- 28, line 5

Add the following text to the end of the paragraph:

If the proposed treatment complies with applicable policies and regulations, the resource specialist will document this compliance with a memo to file.

Page 2- 31, line 14

Add the following text:

**BMPs will be implemented as part of exotic plant management treatments. The resource manager responsible for supervising exotic plant management activities will be responsible for ensuring that mitigation measures and BMPs occur. Each of these treatments is discussed in the following sections.**

Page 2- 48, line 28 and Page 4- 40, line 29

Add the following text:

Highly water- soluble pesticides **that do not have aquatic labels** will not be used in areas where there is potential to affect surface water or ground water resources.

Page 2- 52, line 8

Modify and add the following text:

Equipment would be maintained and calibrated: ~~prior to each application of pesticides.~~

- **On a regular basis, and at a minimum of the start of each season**
- **Prior to an applicator operating new equipment or equipment on which they have not been calibrated**
- **After equipment is repaired or replaced in a manner that could affect the application rate.**

Page 3- 5, line 38

Add the following text:

Geological resources are documented in MNRR's General Management Plan Environmental Impact Statements (NPS 1997:104 and NPS 1999a:72) and are directly quoted.

Page 3- 6, Line 3

Modify text as follows:

**Known fossil sites in the 59- mile district of the MNRR are nearly all gravel pits and only four sites of the MNRR are documented in scientific literature. Fossils in the 39- mile district area exceptionally illustrate the geologic history of the Eocene- Recent epochs. Miocene epoch and similar Miocene fossils are believed to be widespread in the area with potential for more discoveries, but there has been little recent exploration.**

Page 3- 18, Line 21

Modify text as follows:

MNRR's *Final General Management Plans, Environmental Impact Statements* (NPS 1997:118 and NPS 1999a:85) documents air resources as follows.

Page 3- 30, Line 7

Add the following text:

**“The Wyoming Department of Environmental Quality’s Belle Fourche River Watershed Plan (WDEQ 2004) states that agricultural impacts “may have an adverse and identifiable effect on water quality, especially fecal coliform levels.”**

Page 3- 32, Line 37

Modify text as follows:

MNRR's *Final General Management Plans, Environmental Impact Statement* (NPS 1997:117 and NPS 1999a:71, 83, 84) documents water resources and reads as follows.

Page 3- 33, Line 5

Modify text as follows:

**The 39- mile segment of the Missouri River from Fort Randall Dam, South Dakota to Running Water, South Dakota and the 59- mile segment of the Missouri River from Gavins Point Dam in South Dakota to Ponca State Park in Nebraska are two is one of the few remaining segments of the Missouri River that are is not channeled or dammed. The MNRR occurs along these is segments of the Missouri River, including the lower Niobrara River and lower Verdigre Creek. These is sections of the river have been designated as a national recreational rivers. There are several large islands within this segment. Fort Randall and The Gavins Point Dam controls uniform river flow on the open Missouri, and the USACE performs flow management.**

Page 3- 52, Line 2

Modify text as follows:

MNRR's *Final General Management Plans, Environmental Impact Statements* (NPS 1997:105, NPS 1999a:73, 74, 83) describes vegetation resources and is updated as follows.

Page 3- 61, Line 40

Modify text as follows:

Terrestrial wildlife resources are taken directly from MNRR's *Final General Management Plans, Environmental Impact Statements* (NPS 1997:107, NPS 1999a:75, 76).

Page 3- 62, First Paragraph

Add following text to end of paragraph:

However, the Yankton Sioux Tribe and other private ranches maintain domestic herds of elk and bison, and an established free- roaming (wild) herd of elk resides in the Boyd County, Nebraska and Gregory County, South Dakota region adjacent to the 39- mile segment of MNRR.

Page 3- 83, Line 22

Modify text as follows:

Recreational resources are described in MNRR's *Final General Management Plans, Environmental Impact Statements* (NPS 1997:28, 36 and NPS 1999a:30, 100) and read as follows. The majority of visitation in MNRR is by local residents, ~~with the exception of Ponca State Park.~~

Page 3- 83, Line 40

Delete the following text:

~~The USACE, under cooperative agreement, manages bank stabilization, land acquisition, and recreational facility development. The Gavins Point project manager is part of the planning team.~~

Page 3- 84, Line 3

Delete the following text:

~~Easement interests could be acquired, however none have been acquired. In 1980, 55 of the 66 owners contacted signed a right- of- entry form for stream bank protection and gave the NPS scenic easements.~~

Page 3- 84, Line 10

Modify text as follows:

There are no zoning controls for Yankton ~~County~~, Gregory, Bon Homme, and Charles ~~Mix Counties~~, South Dakota or Cedar ~~and~~, Dixon, Boyd, and Knox Counties, Nebraska.

There are more than 1520 public and private access areas **on the designated National Recreational River reaches from Fort Randall Dam Missouri River from Gavins Point Dam to Ponca State Park, including the lower Niobrara and Verdigre waterways.**

Page 3- 100, Line 21

Modify text as follows:

This description of cultural resources is taken directly from the MNRR *Final General Management Plans, Environmental Impact Statements* (NPS 1997:119- 127 and 1999a:86- 91) and is updated as follows.

Page 3- 100, Line 36

Modify text as follows:

Historic Indian tribes, including the Omaha, Ponca, **Yankton**, Santee Dakota, Pawnee, Arikara, Ioway and the Brule and Oglala Divisions of the Lakota, are also believed to have used the area.

Page 3- 100, Line 40

Modify text as follows:

Several of these forts were situated along the 59- mile stretch of the Missouri River, including Fort Vermillion I, McClellans Trading Post, and a Columbia Fur Company Post, as well as **the 39- mile district on the Missouri River, including Ponca Post, Fort Mitchell, and Le Clerc's Post.**

Page 3- 100, Line 18

Modify text as follows:

Ponca State Park, **Niobrara State Park, and Randall Creek Recreation Area** demonstrates the growth of 20<sup>th</sup> century tourism and recreation along the Missouri River.

Page 3- 100, Line 33

Modify text as follows:

In Nebraska, within or immediately adjacent to the recreational river boundaries, ~~six~~ several historic properties are listed on the National Register **including:** the Bow Valley Mills, the Meridian Bridge at Yankton, **the Niobrara River railroad bridge, Red Bird Fort, Ponca Fort, and Schulte** Archaeological Sites, Wiseman Archaeological Site, Ponca Historic District, and Indian Hill Archaeological Districts.

Page 3- 114, Line 28

Modify text as follows:

MNRR's *Final General Management Plans, Environmental Impact Statements* describes social and economic resources (NPS 1997:139 and NPS 1999a:101) and reads as follows. The regional population has decreased 7 percent during the last 65 years. The 1990 census recorded ~~599~~3,000 people in the ~~five~~10- county region. There is substantial immigration to the area. Only 61 percent of the current residents were born in the region. The population **in the 59- mile district** is 98 percent white and there are no Native American reservations in the immediate area. **The population in the 39- mile district is 91 percent white and 9 percent American Indian, with the Yankton Sioux, Ponca, Santee reservations in the area.**

Total employment in 1990 was approximately ~~33~~50,000. The overall employment in the region increased **10- 12** percent between 1975 and 1990. The primary sources of employment are **agriculture**, government, manufacturing, service sector, and retail sales. Tourism makes a minor contribution to the regional economy. Tourism for the area can be overestimated because most visitor use is by local residents, which provides no additional economic benefit to the region.

Regional per capita income is lower than in most surrounding counties or in South Dakota, Nebraska, or the nation as a whole. The poverty rate is 15- 22 percent.

Page 4- 69, Line 4

Modify text as follows:

Agricultural use (including the use of pesticides and fertilizers) ~~and cattle grazing of lands surrounding DETO~~ have also degraded the quality of the Belle Fourche River. Pesticide and fertilizer runoff from agricultural lands ~~located outside DETO~~ degrade water quality in the Belle Fourche River.

Page 4- 69, Line 27- 28:

Replace ~~Overgrazing by park neighbors creates disturbed areas adjacent to the park, which also contributes to the reestablishment of exotic plants.~~

with

Agricultural use creates disturbed areas near the park, which may also contribute to the reestablishment of exotic plants.

Page 4- 69, Line 36

Replace ~~“livestock disturbance.”~~ with “agricultural use.”

Page 4- 70, Line 20- 23:

Replace:

~~Ranching activity has decreased the amount and quality of terrestrial wildlife diversity and abundance outside DETO, which likely is having an adverse effect on park wildlife. The park is fenced to the west and north, which has also reduced natural wildlife migration into and out of the park.~~

with

To protect park property, an 8 foot tall fence is located along the west and north boundary of DETO. The fence is likely having an adverse effect on park wildlife by reducing natural migration into and out of the park.

Page 4- 71, Line 11:

Replace ~~“External grazing sources...”~~ with “Agricultural use...”

Page 4- 80, Line 4

Modify text as follows:

The potential for pesticides to reach the ~~Knife~~-Missouri River may be lower under Alternative 2 because of a number of BMPs would be implemented to carefully control the conditions under which pesticides are applied.



Page 6- 1

Add the following references after the citation for Bluemle 2004:

Bovey, R. D 1987. Weed control problems, approaches, and opportunities in rangeland. Review of Weed Science. 3:57- 92.

Butler, Jack L., and Daniel R. Cogan. 2004. Leafy Spurge Effects on Patterns of Plant Species Richness. Journal of Range Management. 57:305- 311.

Page 6- 3

Add the following references after the citation for Leafy Spurge Scientific Advisory Panel (1994):

Lym, R. G. and K. C. Christianson. 2002. Evaluation of Imazapic and Quinclorac applied under trees and other woody species. Research Progress Report Western Society of Weed Science. 156- 157.

Lym, R. G. and C. G. Messersmith. 1990. Cost- effective long- term leafy spurge (*Euphorbia esula*) control with herbicides. Weed Technology. 4:635- 641.

Lym, R. G. and C. G. Messersmith. 1987. Leafy spurge control and herbicide residue from annual picloram and 2,4- D application. Journal of Range Management. 40:194- 198.

Lym, R. G. and C. G. Messersmith. 1985. Leafy spurge control and improved forage production with herbicides. Journal of Range Management. 38:386- 391.

Page 6- 3

Add the following reference after the citation for Manasek (2004):

Markle, D.M. and R.G. Lym. 2001. Leafy Spurge (*Euphorbia esula*) Control and Herbage Production with Imazapic. Weed Technology. 15:474- 480.

Page 6- 3

Add the following references after the citation for Marriott and DiSalvo (2001):

Masters, R. A., D. Beran and F. Rivas- Pantoja. 1998. Leafy spurge (*Euphorbia esula*) response to AC 263,222. Weed Technology. 12:602- 609.

Masters, R. A., R. N. Stougaard, and S. J. Nissen. 1994. Leafy spurge (*Euphorbia esula*) control with fall- applied imazapyr, imazaquin, and imazethapyr. Weed Technology. 8:58- 63.

Masters, R. A., K. P. Vogel, and R. B. Mitchell. 1992. Response of central plains tallgrass prairie to fire, fertilizer, and atrazine. Journal of Range Management. 45:291- 295.

Page 6- 7

Add the following reference after the citation for NPS 1998c:

NPS. 1997. Final General Management Plan. Environmental Impact Statement. Missouri/Niobrara/Verdigre Creek. National Recreational Rivers. Nebraska, South Dakota.

Page 6- 11

Add the following reference after the citation for White et al. (2002):

Wyoming Department of Environmental Quality (WDEQ). 2004. Belle Fourche River Watershed Plan. March.

Page 6- 11

Add the following reference after the citation for USGS and NPS (2004):

Cheatham, J. 2005. Personal communication between Jim Cheatham and Jennifer Vollmer. July 8.

Appendix F, page F- 1

Add the following information after contact information for Ryan Amundson:

Name: **Dr. Jack Butler**

Title: **Project Leader and Research Ecologist**

Area of Expertise: **Plant Ecology and Invasive Species**

Address: **USDA Forest Service**

**Rocky Mountain Research Station**

**1730 Samco Road**

**Rapid City, South Dakota, 57702**

Phone: **605- 394- 2670**

Email: **jackbutler@fs.fed.us**

Referred by: **Chad Prosser**

Appendix F, page F- 3 – add the following contact information to the table before Dr. Ron Hiebert:

Name: **Steve Grube**

Title: **Missouri River Coordinator**

Area of Expertise: **Agencies' liaison to landowners within Missouri National Recreational River**

Address: **88090 Spur 26- E**

**Ponca, NE 68770**

Phone: **402- 755- 4113**

Email: **steve.grube@ne.usda.gov**

Referred by: **Rebecca Latka, U.S. Army Corps of Engineers**

Appendix F, page F- 6 – add the following to the technical contact information for Greg Pavelka:

Area of Expertise: Glyphosate- based herbicide on sandbar islands in Missouri River,  
**technical contact for interior least tern and piping plover nest location data within  
the Missouri National Recreational River**

Appendix F, page F- 6 – add the following contact information will be added to the table  
following Dr. Danny Walker:

Name: **Dr. Robert G. Wilson**

Title: **Professor and Extension Weed Specialist**

Area of Expertise: **Life cycles, seed germination, biology, carbohydrate physiology,  
and competitiveness of economically troublesome weeds found in western  
Nebraska.**

Address: **4502 Avenue I**

**Panhandle Research and Extension Center, Department of Agronomy and  
Horticulture**

**University of Nebraska**

**Scottsbluff, Nebraska 69361- 4939**

Phone: **(308) 632- 1263**

Email: [rwilson1@unl.edu](mailto:rwilson1@unl.edu)

Referred by: - -

Appendix K, page K- 1, add the following information after entry for Tern, Black:

Species Name: **Dace, Northern redbelly (*Phoxinus eos*)**

General Habitat: **Beaver ponds, bogs, and clear streams**

## RESPONSES TO COMMENTS

Public comments were carefully reviewed for substantive comments. Substantive comments are those that challenge the accuracy of the analysis; dispute information accuracy; suggest viable alternatives; or provide new information that makes a change in the proposal. Of the public comments received on the environmental assessment, the following comments have been determined to be substantive. A response to the comment follows.

### **Commenter 1**

**Comment 1- 1:** Crook County still has concerns about the “exotic plants” definition and would like to see the definition and criteria made more clear and concise. We are reassured somewhat by the language on Page 1- 6, and the statement on that page: “Only exotic plants that meet the above NPS definition and criteria will be managed under the EPMP/EA.” However, the list of criteria presented includes hard- to- quantify characteristics (i.e. “Disrupts the accurate presentation of a cultural landscape...”). We highly recommend that, prior to planning treatment of exotic plants, other than those on the local and state noxious weed lists, Park resource managers consult with local county weed and pest boards to make sure that control efforts are complementary to local efforts as well as supported by local entities and private landowners.

**Response to Comment 1- 1:** Under the preferred alternative, the NPS will solicit input from exotic plant management experts, coordinate exotic plant management efforts with other land management agencies, and solicit input from the general public and neighboring landowners.

However, each park must also comply with NPS policies. The NPS has a mandate to preserve natural and cultural resources now and for future generations. NPS Management Policies (2001) further states, “(e)xotic species will not be allowed to displace native species if displacement can be prevented.” To comply with NPS policy, some parks may take actions independent of those conducted by surrounding land management agencies or neighboring landowners to prevent the displacement of native species and to protect resources within the park unit boundaries for future generations.

**Comment 1- 2:** Crook County applauds the plan’s utilization of an integrated pest management approach. We think that a vital part of making this effort a success is close coordination with local county weed and pest agencies, local county commissions, the USDA Forest Service, the Bureau of Land Management, state agencies involved with land and resource management, and any other entities in the vicinity of the Parks that are involved with area resource management efforts. Such coordination and cooperation should also include research and monitoring efforts. To our knowledge, there was no active collaboration for the EPMP/EA between the Forest Service Research Station at Rapid City and the NPS, even though we understand that various noxious weed studies have been conducted on Theodore Roosevelt National Park by the Research Station over the past decade or so. Drawing on existing knowledge and resources in the region is of paramount importance to this effort. We strongly encourage the NPS to participate in such coordination and collaboration.

**Response to Comment 1- 2:** Page 2- 22 states, “Ongoing collaboration with exotic plant management experts both within and outside the NPS will also be conducted on a regular basis. This level of collaboration is needed to help NPS resource managers keep informed on the latest exotic plant management technologies available. Such collaboration will also be an opportunity for individuals to share and learn from their exotic plant management successes and challenges. A list of technical expert contacts for exotic plant management collaboration is provided in Appendix F.”

Appendix F will be updated to add contact information for technical experts from the Rocky Mountain Research Station Center for Great Plains Ecosystem Research at Rapid City. Dr. Jack Butler of the Rocky Mountain Research Station has been conducting research on the dynamics of exotic plants at Theodore Roosevelt National Park since the 1980s. The relationship the parks have with the research station is a valuable asset for the Northern Great Plains parks. An example of benefits of this relationship is information provided in *Leafy Spurge Effects on Patterns of Plant Species Richness* (Butler and Cogan 2004). This document provides insight into the impacts of leafy spurge on native species at both the local and regional levels. The document also provides useful information related to restoration efforts following control of leafy spurge.

#### **Commenter 2**

**Comment 2- 1:** The NPS's process for coordinating site- specific annual efforts for exotic plant control within the MNRR [Missouri National Recreational River] among the partnering agencies is alluded to, but not clearly defined in the EA. Such coordination is important to not only inform other managing agencies of annual exotic plant control actions, but also to allow for opportunities to consolidate efforts within a given reach or area. For instance, the Corps' annual efforts to control sandbar vegetation may potentially overlap with some of the NPS's annual efforts to control exotic vegetation within the MNRR. We think annual coordination needs to go beyond the existing weed boards in order to encompass team members from our agency and other agencies that are involved in other vegetation- based efforts within the reach. We use many of the same chemicals and protocols for our vegetation control so a consolidated effort may be feasible.

**Response to Comment 2- 1:** Comment noted. The NPS is committed to coordinating with the U.S. Army Corps of Engineers, county weed supervisors, and private landowners for all exotic plant management activities. This plan acknowledges the importance of partnering agreements between Missouri National Recreational River and partnering agencies. Page 1- 5 states, “Parks would cooperate with state, county, private, tribal, and federal officials, and would be necessary in parks with management partnerships such as Niobrara National Scenic River and Missouri National Recreational River. Page 2- 13 further discusses the importance of these relationships, “In some cases, extensive collaboration is necessary in parks with management partnerships such as Niobrara National Scenic River and Missouri National Recreational River. Much of the land included within these parks is privately owned, so exotic plant management requires extensive coordination among the NPS, county weed supervisors, and private landowners.” This text will be revised to identify the U.S. Army Corps of Engineers as one of the entities with whom extensive coordination will be conducted.

**Comment 2- 2** Additionally, coordination should also include the newly established Missouri River Coordinator, Steve Grube, who also serves as the agencies' liaison to the landowners within the MNRR. Since the MNRR is a "private lands park," all actions on private lands can only be implemented through the cooperation of willing landowners. Mr. Grube could be very useful in informing landowners of exotic weed issues and possible methods of control.

**Response to Comment 2- 2:** Comment noted. Contact information for Mr. Steve Grube will be added to Appendix F of the plan to facilitate future coordination and collaboration between agencies, including Missouri National Recreational River, and private landowners.

**Comment 2- 3:** It sounds as though an annual report will be prepared on exotic plant control efforts, based on monitoring done. Does this monitoring include the success of the treatment used on the targeted species? For monitoring within the MNRR, we would recommend coordinating with the Corps' ongoing database that is being developed by the USGS. Together we would be able to develop a good scientific database for effective plant control to meet the management goals of both agencies.

**Response to Comment 2- 3:** Comment noted. Monitoring will be used, as part of adaptive management, to evaluate the success of the treatment on the targeted exotic plant species. The NPS is committed to sharing data among cooperators to foster collaboration and to increase the potential success of exotic plant management programs.

**Comment 2- 4:** The 1/4- mile buffer around active tern and plover nests is the same as the Corps uses for construction actions. The Corps monitors tern and plover nests annually within the MNRR, so can provide MNRR staff with locational information as needed. The point of contact for nest locations is Greg Pavelka (402) 667- 2581.

**Response to Comment 2- 4:** Comment noted. Contact information for Mr. Greg Pavelka is included in Appendix F of the plan. The description of his area of expertise will be expanded to identify him as the technical contact for interior least tern and piping plover nest location data within the Missouri National Recreational River.

### **Commenter 3**

**Comment 3- 1:** I full- heartedly support the project. I could not read the entire document, but I did see you are prioritizing which weeds to control. As you stated, the program must be long- term ... how can adequate funding be assured each fiscal year?

**Response to Comment 3- 1:** The 13 parks included in this plan already allocate funds for management of exotic plants, and will continue to do so in the future. Page 4- 33 states, "Funding for its [IPM] implementation would come from a continuation of existing funding used for exotic plant management. There would likely be a negligible increase in administrative support for personnel and procurement as well as increased storage space needs and fuel use. However, parks already provide these services and can absorb the small increases associated with continuing existing exotic plant management programs."

To effectively manage exotic plant species, the NPS's Biological Resources Management Division (BRMD) also established the Exotic Plant Management Teams (EPMT) in 2000. EPMTs are part of the long- term control of invasive species set by the Natural Resource Challenge. They also satisfy agencies' needs to implement Executive Order 13112 on invasive species, which includes the Invasive Species Council National Management Plan. The Northern Great Plains Exotic Plant Management Team was funded and consists of two permanent positions located at Theodore Roosevelt National Park. The team hires a field season crew each year at Wind Cave National Park, Badlands National Park, and Theodore Roosevelt National Park to conduct invasive species control in 14 National Parks in the Northern Great Plains (the EPMT also provides services to Badlands National Park).

In addition, there are a number of funding sources available for park- specific projects that protect, restore, or maintain natural resources. Parks can apply for funding during the Service- wide Comprehensive Call for projects that is issued each year.

#### **Commenter 4**

**Comment 4- 1:** Starting in 2001 or 2002 the park [Devils Tower] began an aggressive campaign with chemicals (primarily Plateau) to control Leafy Spurge. They treated large acreages (map attached from 2002) with Plateau and possibly other chemicals. They treated under the canopy of Oak, Ash, Cottonwood, Chokecherry, Plum and other deciduous species as well as treating large open grassy areas. The results were and are an environmental disaster that is ongoing to this day. There are large areas of trees and brush that are dead and dying. (Many are ash, cottonwood and oak that are 50+years old. The results were immediately visible and are worsening year by year.

Subsequent years have not been much better. They have not gone back and given a look at past results. What is happening is an environmental disaster. There are acres and acres of dead trees and bare ground where native grasses once stood.

Today 3- 4 years after initial treatment many of the areas of bare ground are coming back to such undesirable species as: Canada Thistle, Leafy Spurge, Prickly Pear Cactus, Houndstongue, Milkweed and other nonnative species.

Most of the species they have killed will not be back in my lifetime or my children's for that matter.

The loss of any species that takes decades to grow is absolutely unacceptable.

Even with their best efforts eradication will not be possible. Should they continue to use present practices, over time they will lose large parts of their native species. They already have a good start on this.

Plateau is a very rate sensitive chemical. Applied at as little as 20% above rates can cause bareground and undesired results. They are doing much of the work with backpacks and their rates obviously DO NOT fall within label requirements. Anyone other than the government would have been in severe trouble for this kind of work.

**Response to Comment 4- 1:** In 2002, leafy spurge infestations at Devils Tower National Monument were treated using Plateau at a rate of 10 ounces of product/acre + 32 ounces of Methylated Seed Oil (MSO)/acre. Many areas (specifically the campground area) consisted of leafy spurge with an understory of cheatgrass. Plateau is a herbicide that is used to treat both species through a fall application (as indicated on the label). In subsequent years, those areas were re- visited and retreated to treat missed and regrowth areas of leafy spurge and/or cheatgrass. The park reduced the application rate of Plateau beginning in 2003. Acceptable efficacy was observed at lower rates for areas treated at Theodore Roosevelt National Park in 2002. The Plant Science Department at North Dakota State University also recommended using reduced rates. ATV's were calibrated to apply 6 ounces of product/acre of Plateau + 32 ounces/acre of MSO. Backpacks were calibrated to apply 8 ounces of product/acre + 32 ounces/acre of MSO. Park staff follows label requirements for each herbicide used.

Treated areas mostly contained both leafy spurge and cheatgrass prior to treatment. Following treatment, these areas contained little standing plant biomass. Precipitation levels well below the 30- year average during 2001- 2004 also compounded recovery of these locations. The relatively low rainfall levels during this period led to little natural regeneration of native species in those areas. However, with adequate rainfall in 2005, the areas are now recovering after being dominated by leafy spurge and cheatgrass for many years. Natural regeneration is now occurring with native and some exotic species. The park will control exotic species in these areas as necessary to aid the recovery of native plant species. The campground area now includes native species such as: needle and thread (*Stipa comata*), green needlegrass (*Stipa viridula*), prairie sandreed (*Calamovilfa longifolia*), western wheatgrass (*Agropyron smithii*), prairie coneflower (*Ratibida columnifera*) as well as other wildflowers and other grasses. This is an example of many areas within the park where chemical treatment of exotic plant infestations has resulted in the successful reestablishment of native species. Given the variability between treated areas (each area has different soil seedbanks and other factors), the reestablishment of desirable native plant species is occurring at different rates throughout the monument.

Chemicals were also used at "Tarpot Draw" to treat leafy spurge from 2002- 2004. Today, leafy spurge is an incidental species within the draw. However, species such as Canada thistle and houndstongue occur in isolated patches within the draw. The park is actively controlling both of these species to prevent their expansion. Leafy spurge now has high biological control populations (*Aphthona lacertosa* and *Aphthona nigriscutis*) in these areas. Therefore, the extent of leafy spurge infestation in this draw is anticipated to be reduced in the near future. Several native grasses and wildflowers are now present within Tarpot Draw and adjacent native upland plant species that were not present 5 years ago are now becoming reestablished.

Within the park, every precaution is taken by park personnel to minimize the potential impact herbicides may have on non- target species. Before any herbicide is used in the park, herbicide labels and scientific literature is reviewed. In addition, the Regional Integrated Pest Management (IPM) Coordinator reviews all proposed herbicide treatments. Once a herbicide has been approved by the Regional IPM Coordinator, all



crew members attend training to ensure proper use of herbicides and other training applicable to the position. The following is a partial list of training that is provided by the NPS or other entities: standard operating procedures, safety, training, licenses and qualifications, personal protective equipment, ATV use, herbicide application, job hazard analysis, herbicide handling and emergency response plan, labels and Material Safety Data Sheets (MSDS), data management, activities log, biocontrol release datasheet, description of biocontrol release datasheet, herbicide application record, description of herbicide application record, use of GPS units, plant identification, and calibration (ATVs, backpacks, and truck mounted sprayers).

Tree mortality has been observed by park personnel within Devils Tower National Monument in both treated and untreated areas. Tree mortality has also been observed outside of park boundaries. Drought conditions over the past 5 years have stressed certain tree species and have promoted insect damage on chokecherry trees. At the present time, it is difficult to assign tree mortality to any single factor other than the drought, although it may be a combination of factors.

According to the Plateau herbicide label, "Plateau herbicide may be used at rates up to 12 ounces per acre for weed control in and around established trees on pasture, rangeland (see "GUIDELINES FOR RANGELAND USE" section) and noncropland areas such as roadsides, prairies and similar areas used for wildlife cover, erosion control, wind breaks, etc". Page 12 and 13 of the Plateau label reports tree species that have tolerance to Plateau directed below foliage and to foliage. All of the herbicide applications at Devils Tower National Monument have been directed below tree foliage. Many of the tree species listed as having tolerance to Plateau (as indicated on the label) occur at the monument, including: spruce species, green ash, choke cherry, cottonwood, juniper species, and oak species. According to Dr. Jennifer Vollmer of BASF Corporation, Plateau herbicide binds tightly to the top 10 inches of soil and is mostly concentrated in the top 2 inches of soil, which is out of reach of most tree roots. Also, the major absorption pathway is foliar, which makes it unlikely that Plateau will impact trees when areas beneath their foliage are treated (Vollmer 2005).

Lym and Christianson (2002) reported that Plateau can be used to treat leafy spurge under certain tree species. In this study, Plateau did not injure elm, oak, walnut, or cedar species at the 3 ounces/acre application rate. The authors also concluded that both juniper and Black Hills spruce were injured by Plateau. Although Plateau caused some yellowing of the new growth, it had no long- term effect on growth.

Lym and Markle (2001) concluded "Fall- applied imazapic [the active ingredient in Plateau] should become a useful tool for leafy spurge management, as 140 grams/hectare plus MSO provided long- term leafy spurge control similar to or better than the present standard of picloram plus 2,4- D at 560 plus 1,120 grams/hectare. Also compared to picloram, imazapic can be used near trees, is less likely to contaminate groundwater, and is not a restricted use herbicide. Imazapic may reduce herbage production temporarily; however, the grass species in this study recovered by mid- summer."

**Comment 4- 2:** The NPS schedules its crews for a set time each year. Last year the NPS crew contacted my wife, Rosanne Driskill about spraying an area next to the ranch that

day. At the time the wind was gusting in the 20 mph plus range. She told them no. They were quite put out and commented that they would go to another area of the park to spray. There was no area that could be sprayed that day without going off label.

If you are to continue to bring in a team for a set time, then it is imperative that they follow label instructions and do not spray when conditions are wrong, just because they are short on time. Continued use of Plateau when rates can not be accurately applied, should be stopped immediately. I am surprised that Tordon is not considered at all in areas where it can be applied according to its label (away from water and away from deciduous species), as it is much more rate tolerant and does not cause the bareground problem in open areas.

**Response to Comment 4- 2:** Park staff always follows label requirements for each herbicide used. Detailed records of spray location, and weather (including, temperature, relative humidity, wind speed and direction) are recorded every two hours.

Tordon is not applied at Devils Tower National Monument in open areas away from water and trees due to its detrimental effect to species richness and lower level of control when compared to Plateau (Master et al. 1998). Also, most priority treatment areas lie either in the floodplain or under trees where concerns about surface and groundwater contamination and impacts to trees precludes its use.

While picloram (the active ingredient of Tordon) is often used to control leafy spurge, scientific literature has reported it may not be the most effective herbicide. “Picloram and 2,4- D are the most commonly recommended herbicides to control leafy spurge. Picloram at 2.2 kilograms/hectare can provide good leafy spurge control for up to 36 months (Lym and Messersmith 1985). The high cost and restrictions in the maximum amount of picloram that can be applied to a given area limits the use of this treatment to small patches of leafy spurge. For large infestations, 2,4- D plus picloram at 1,120 plus 280 grams/hectare or 2,4- D alone at 2,240 grams/hectare is commonly recommended. However, these treatments provide only short- term leafy spurge control. Another drawback of picloram and 2,4- D is the adverse effect these herbicides have on desirable broadleaf species growing in leafy spurge infestations.”

Other studies have found that when compared to picloram (Tordon) and 2, 4- D, imazapic was observed to be most effective in treating leafy spurge. “In 1995, leafy spurge control was greatest (90%) with AC 263,222 [imazapic] at 280 grams/hectare compared with all other treatments... AC 263,222 at 140 g/ha provided better control of leafy spurge than picloram plus 2,4- D. Leafy spurge density was lowest where AC 263,222 was applied at 280 g/ha compared with areas treated with AC 263,222 at 140 g/ha or picloram plus 2,4- D” (Masters et al. 1996). “In 1996, after two consecutive years of herbicide application, AC 263,222 at 140 or 280 g/ha provided at least 89% leafy spurge control compared with only 34% control with picloram plus 2,4- D... Leafy spurge density was greatly reduced following two consecutive years of application of AC 263,222 at 140 grams/hectare. In contrast, density on picloram plus 2,4- D- treated plots was the same as areas that were not treated with herbicide and greater than the density on areas treated with either rate of AC 263,222. Leafy spurge biomass was less where AC 263,222 was applied than where picloram plus 2,4- D was applied” (Masters et al. 1996).

“Annual applications of 2,4- D combined with low rates of picloram (0.28 to 0.56 kg ae ha<sup>-1</sup> [kilograms acid equivalent per hectare]) are commonly recommended for leafy spurge management (Lym and Messersmith 1990). Benefits of this treatment include increased forage yield (Lym and Messersmith, 1985, Lym and Messersmith, 1987) and reduced leafy spurge seed production; however, these herbicides suppress desirable forbs and do not provide long- term control”.

**Comment 4- 3:** This is not an opinion- ANYONE can view the large amounts of trees and brush dying along with large bareground areas throughout the riparian area of the park [Devils Tower]. Areas all around the administration area (highly visible from the highway), as well as a large number of acres on the back of the campground have large ¼ acre+ to 2+ acre bareground areas. They are large enough to be visible clearly from the air. To continue as the plan prescribes is criminal. It took mother nature decades to create the environment that led Devils Tower to become America’s first national monument. It has taken less than 5 years to do irreversible damage to the park.

If past history repeats itself, as I suspicion, the people responsible for this environmental disaster will be safely in another park in another area by the time most of the general public realizes what has happened.

I encourage anyone to tour the park with a copy of the 2002 Chemical Treatment of Plants in hand (as well as subsequent years and not be shocked by the environmental destruction. Almost 100% of the areas treated have some amount of bareground.

Please take a close look at the park and reconsider your plans to continue this wreck.

**Response to Comment 4- 3:** The areas mentioned above contained monoculture stands of leafy spurge and cheatgrass. After treatment, there was little standing plant biomass. Recovery of these locations were slowed further by precipitation levels well below the 30 year average. The relatively low rainfall levels from 2001- 2004 led to little natural regeneration of native species in those areas. However, with adequate 2005 rainfall, the areas are now recovering after being dominated by leafy spurge and cheatgrass for many years. Natural regeneration is now occurring with native and some exotic species. The park will control exotic species in these areas as necessary to aid the recovery of native plant species. The campground area now dominated with native species such as: needle and thread, green needlegrass, prairie sandreed, western wheatgrass, prairie coneflower, and *Penstemon* spp. as well as other wildflowers and other grasses. The use of Plateau has helped these native species become reestablished in areas previously infested by leafy spurge and cheatgrass. This is one of many areas like this in the park that has resulted in the successful recruitment of native species after herbicide treatment. Given that each location is different depending on the soil seedbank, the establishment of desirable native plant community species is occurring at different rates throughout the monument.

#### **Commenter 5**

**Comment 5- 1:** The Northern Great Plains Exotic Plant Management Plan and Environmental Assessment lacks input from weed scientists located in the states of Wyoming, Nebraska, North Dakota, and South Dakota. State Universities located in

each state have supported weed scientists who have spent many years studying the life cycles and control of most of the exotic plants listed in the document. It is deplorable that more of this expertise was not utilized in the development of these plans.

**Response to Comment 5- 1:** As previously stated in Response to Comment #2, consultation and coordination with weed experts in the states of Nebraska, North Dakota, South Dakota, and Wyoming is an inherent part of this plan. Resource specialists at each park as well as the Northern Great Plains Integrated Pest Management team currently consult with a variety of experts at local, state, and federal agencies to stay abreast of the latest exotic plant management techniques. Such consultation will continue and will be expanded under the preferred alternative.

Contact information for a number of technical contacts is included in Appendix F of the document. Contact information for Dr. Robert Wilson, professor at the University of Nebraska Lincoln, will be added to Appendix F as an exotic plant management expert.

**Comment 5- 2:** The document provides little if any information on the effectiveness of proposed treatments. An example would be the use of *Ceutorhynchus litura* for Canada thistle suppression. Published data by Hein and Wilson (2004, Weed Science 52:628-633) indicates that *C. litura* does not provide satisfactory Canada thistle control.

**Response to Comment 5- 2:** Analyzing the potential efficacy of each treatment method *that may be implemented* at each park is outside of the scope of this plan. Page 2- 4 states, “The scope of this EPMP/EA is to develop a long- term management plan that would reduce the impacts of (or threats from) exotic plants to native plant communities and other natural and cultural resources, including cultural landscapes, at 13 park units located in the NGP. Because this project involves multiple parks, the approach is to develop a general plan that provides resource managers with multiple treatment options for exotic plant management. Resource managers can select the most appropriate treatment option or combination of treatments included in the EPMP/EA to minimize potential impacts and maximize overall management success.”

As mentioned under the Response to Comment #11, resource specialists will consult with weed management experts to initially identify potential treatment methods. The preferred alternative also includes an adaptive management program that will be implemented at each park to evaluate the effectiveness of various treatments. Page 2- 27 outlines how adaptive management will be used under this plan, “Treated areas are then monitored to determine whether management objectives established during the initial planning stages were met. If management objectives were met, the resource manager documents the results of monitoring. The resource manager should, however, continue to consider other treatment options as they become available to identify other alternatives that might have even lower impacts. If management objectives are not met, the selected treatment may be modified, or alternative treatments may be considered through adaptive management.” Adaptive management is a system of management practices based on clearly identified outcomes; monitoring to determine if management actions are meeting outcomes; and if not, facilitating management changes that will best ensure that outcomes are met or by reevaluating outcomes. Adaptive management

recognizes that knowledge about natural resource systems is sometimes uncertain and is the preferred method of management in these cases.

**Comment 5- 3:** The document suggests that a number of techniques are going to be utilized to suppress exotic weeds but provides little information on the expected results of these plans. After ten years of implementation, what can we expect from these plans? A decrease in infestation? No change? Or an increase in exotic weed populations?

**Response to Comment 5- 3:** See Response to Comment #12.

**Comment 5- 4:** The document should spend more time talking about life cycles of exotic weeds and how this information can be helpful in planning control programs instead of talking about noise pollution from aircraft. How do aircraft taking off from a nearby airport influence exotic plant management?

**Response to Comment 5- 4:** Considering the life cycles of exotic weed species is a crucial element of this plan. Page 1- 4 and Page 2- 19 state that each exotic plant's natural history will be evaluated before developing management strategies. Each exotic plant species' life cycle will directly affect the type and timing of treatment methods that are most effective for that species in a specific environment. Under the preferred alternative, resource specialists at each park will consult with experts from local, state, and federal agencies and universities to identify the most appropriate treatment method or methods for that plant species. Additional text will be added to Page 2- 27 to more clearly describe how exotic plant species life cycles will be considered in selecting treatment methods.

The process that resource specialists will follow in selecting treatment methods is further discussed on Page 2- 27: "the resource manager identifies a proposed treatment option that is feasible given potential costs, available resources, potential impacts and effectiveness, and applicable regulations and policies. The next step is to consider whether there are any other treatment options, treatment agents, or application methods available that will result in lower impacts when compared to the proposed treatment option given potential costs, available resources, impacts, and effectiveness. If there are no other feasible options available, the resource manager selects the proposed treatment. However, if the resource manager identifies an alternative treatment that has lower impacts and that is feasible, the alternative treatment option is selected."

While "aircraft taking off from a nearby airport" does not directly influence exotic plant management, it does constitute a temporary impact to the natural soundscapes within parks. NPS Management Policies (2001) state, "The Service will restore degraded soundscapes to the natural condition wherever possible, and will protect natural soundscapes from degradation due to noise (undesirable human- caused sound)." Since NSP management policy requires protection of soundscapes from degradation, potential impacts to soundscapes from various activities, including operation of aircraft, was analyzed in this document.